



UGANDA PROTECTORATE

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ANNUAL REPORT  
OF THE  
DEPARTMENT OF  
AGRICULTURE

FOR THE PERIOD

*1st July, 1944—30th June, 1945*

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PART I—ADMINISTRATIVE

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Published by Command of His Excellency the Governor

ENTEBBE  
PRINTED BY THE GOVERNMENT PRINTER, UGANDA  
1946

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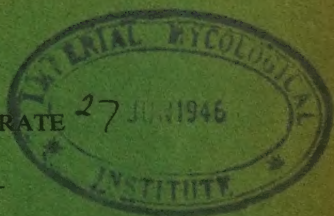
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DEPARTMENT OF AGRICULTURE.

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PART I.—ADMINISTRATIVE.

*For the Period 1st July, 1944 to 30th June, 1945.*

FOREWORD.

Throughout the year the staff of the Department has been engaged primarily in the campaign for increased food production, although soil conservation, cotton production, education and general supervision of marketing have been by no means neglected. The shortage of European staff has continued, as a consequence of which considerably more responsibility, especially with regard to the supervision of district agriculture, has fallen upon the African officers of the Department, and I again record with great pleasure that in most cases these have responded well to the additional demands made upon them.

The past year has once again proved difficult for agriculture, in that weather conditions continued to be unfavourable. The spring rains were delayed in 1944, and led to serious food shortages in some areas prior to the onset of the good autumn rains of that year, necessitating the distribution of over 11,000 tons of food to natives of the Eastern Province. In early 1945 it was feared that supplies would also be required in the West Nile and in parts of Lango, but fortunately the local food reserves of these areas proved sufficient to tide the population over until the grain harvest. The recent campaigns to promote the planting of cassava were thus of very great value, and this crop constituted a first line of defence against famine in most parts of Uganda. Early in 1945 a food shortage occurred in Teso, Mbale and Northern Busoga Districts, to which 1,500 tons of food were distributed.

It is, therefore, not surprising that the famine reserves of food have been most seriously depleted during recent years, and no relaxation of the propaganda to extend the growing of crops suitable for such reserves can be contemplated.

The early rains of 1945 were delayed, as a result of which the spring food crops were planted later than usual with the further result of delay in planting the cotton crop. In some pastoral areas there was difficulty in obtaining sufficient grazing for cattle before the main rains were received.

As part of the war production effort, the Protectorate was once again requested to produce a large crop of maize; the 1944 crop amounted to 48,225 tons as against 23,300 tons during the previous year. Difficulty was experienced in marketing and transporting this large crop, much of which was exported to Kenya. In spite of the considerable dangers of soil erosion and loss of fertility consequent upon continued cultivation of maize, the food position in East Africa has made it imperative that Uganda should continue maize production for at least the years 1945 and 1946. The crop planted in the spring of 1945 was poor and the quantity available for export to Kenya is likely to be very much smaller than in 1944; unfavourable weather conditions and a higher rate of local consumption are contributory factors in this reduction.

As in previous years the maximum production of other food crops such as oilseeds, soya beans and mixed beans was planned in suitable areas. Sales of groundnuts and simsim were on a slightly smaller scale than during the previous year, due largely to local consumption increasing during the periods of shortage. The cultivation of soya beans is being extended from Buganda, notably to Ankole, where it shows signs of becoming a popular cash crop. Consumption by the growers is still being encouraged.



### The 1944-45 Cotton Crop.

The total acreage planted was 1,072,493, as against 1,233,801 acres for the previous crop, but sales were larger and represented 270,194 bales as compared with 188,177 bales during 1943-44. The total value to the grower amounted to £2,688,619 (the 1943-44 crop was valued at £1,647,552 to the grower) and the average price paid was Shs. 14/83 per 100 lbs. seed cotton, based on the guaranteed price of the Ministry of Supply of Shs. 12/- per 100 lbs. for ARK, plus an allowance to cover increased costs of living and production. Details of the acreages and production in the various Cotton Zones are given in Appendix I to this Report.

### Coffee.

Coffee crops in the various areas were smaller than those of the previous season, a normal course of events in Uganda, where heavy crops usually alternate with lighter ones. Total buyings by the Coffee Control amounted to 14,523 tons Robusta F.A.Q. and 602 tons Arabica F.A.Q. The Bugishu Arabica crop was 2,705 tons as compared with 3,679 tons in 1943-44, while the Robusta crop in the Bwamba area of Toro was 299.5 tons. The approximate total value of these crops to the African growers was £659,000.

### Other Crops.

The details of the tobacco crops are given below in the report of the Provincial Agricultural Officer, Western Province. Rice production in Uganda is largely governed by the incidence of blast disease, and hitherto no satisfactory method of control has been devised, although there is some evidence that certain varieties are less susceptible and tend to give more certain returns than others. Efforts are now being made to separate out these improved strains and to discard the remainder as soon as sufficient stocks of seed are available. The crop is grown mainly in the Eastern Province and in a limited area in the Bwamba area of Toro District. Total sales from the 1944 crop amounted to 2,252 tons, but a considerable proportion of the actual production was consumed by the growers. Sales figures of other crops were :—

|                       | 1944-45.     | 1943-44.     |
|-----------------------|--------------|--------------|
|                       | <i>Tons.</i> | <i>Tons.</i> |
| Groundnuts .. ..      | 4,973        | 8,750        |
| Soya Beans .. ..      | 4,146        | 4,000        |
| Simsim .. ..          | 2,390        | 2,858        |
| Rubber (year 1944) .. | 678          | 855          |
| Sugar .. ..           | 41,889       | 42,530       |
| Tea .. ..             | 1,344        | 825          |
| Sisal .. ..           | 1,901        | 1,892        |

The control of soil erosion and the maintenance of soil fertility continue to form a major part of the activities of the Department. Strip cropping systems have now reached the stage of normal agricultural practice in Teso and are extending to neighbouring districts. Demonstration centres have been developed in most districts and there is reason to believe that those at Nsangi and Lwada in Buganda have definitely interested dwellers in other areas, and that more and more copying and adaptation of the results achieved at these centres can be expected during the next few years. This cannot help but lead to a much more economical use of the land available and to the conservation or actual improvement of its fertility. The distribution of the very valuable compost made from township refuse at Kampala has been continued and although it is still too early for any general effect upon the

surrounding countryside to be observable, it means a great deal to know that efficient use is now being made of a valuable product, formerly entirely wasted. The work done by the Executive Officer of the Kampala Township Authority in respect of this matter is gratefully acknowledged.

The maintenance and improvement of the fertility of Uganda soils is coming more and more to rest upon the firm foundation of the grass rotation and results indicate that there is at present no method of fallow or manuring which can, as a practical proposition, compete with a period of years under certain grasses in developing a structure in the soil capable of resisting erosion. The methods of analysis of soils developed by the Chemical Section of the Department have now been proved to give a suitable index of fertility and erosion status of our soils, and have been applied to large numbers of samples collected from most parts of the Protectorate. They show definitely that all cultivation operations tend to break down a good soil structure sooner or later, and that the best method of regenerating a desirable structure is to fallow the land for a period of years under grass. This gives a scientific basis upon which to develop systems of cultivation and farming suitable for any particular soil, and it remains to extend this knowledge and to continue the work already begun in putting it to practical use in each area of Uganda.

The importance of the grass rotation in Uganda agriculture leads naturally to the question of utilising the areas planted under grass to the best advantage, by the development of suitable systems of mixed farming. In many districts of Uganda the grass fallow areas are needed for pasturage, so that we have to devise systems of farming which will strike the best possible balance between the use of the grass ley for development of soil structure and its use in animal husbandry. Experimental work towards this end is being carried out at the two main stations of Kawanda and Serere, but it is obvious at the outset that final results must be delayed, as experience over a considerable period of years is the only sure test of any systems under trial. We also have to consider which of the species of grass available for rotation farming is the best from the two points of view, which may in practice be considerably divergent, of use for pasture and for soil regeneration.

The improvement of native cattle herds is so great a problem and complicated by native traditions and prejudices that progress cannot fail to be extremely slow for many years to come. At both Kawanda and Serere attempts are being made to build up improved milking herds by selection from native cattle and from these herds to obtain further improvement by selective breeding. The stall feeding trials at Kawanda have been continued successfully, the animals being sent for slaughter to the Kampala market. In spite of this success, however, there is as yet not much sign that the method interests the African, who seems afraid of the work involved in cutting and carting fodder for the animals. On the other hand, there has been a great demand from Africans in the vicinity of Kawanda for pure-bred pigs and poultry produced at this station; improvement in native stocks cannot fail to be achieved as a result of this demand.

Uganda has continued to be fortunate in that we have escaped large-scale invasion by locusts, which, however, still remain well within range and a potential menace. During the year a number of swarms of the Desert Locust reached Karamoja and were dealt with in that area and the neighbouring parts of Kenya. Other immature swarms passed northwards along the western borders of Uganda and eventually reached the Sudan. No abnormally severe outbreaks of other insect pests were recorded during the year, except that towards the end of the cotton season the population of stainers (*Dysdercus* spp.) became very heavy at Kawanda and caused severe damage to the crop.



The virus disease of cassava continues to take more or less severe toll of the crop, but more resistant varieties of cassava are being increased as rapidly as possible in all areas, with the object of replacement of the present susceptible types at an early date. Work on the virus disease of sweet potato continues with the object of selecting the most resistant or tolerant types from the varieties now generally grown. Other aspects of research on this disease are being conducted by the East African Agricultural Research Institute, Amani, and by I.N.E.A.C. (Congo Belge), in close collaboration with officers in Uganda. Results obtained so far indicate that some native varieties of the crop are more resistant than others, in that they show a lower proportion of infection in the field, and are able to produce a crop in spite of the disease. Such varieties are being increased to provide stocks from which the more susceptible varieties can be replaced.

During the year negotiations for the siting of the Cotton Research Station of the Empire Cotton Growing Corporation at Namulonge, near Gayaza, were completed, and in this connection many visits were received from the Corporation staff. These were very welcome and they also afforded valuable opportunities for the discussion of cotton research problems with the officers of this Department.

Much of the Director's time has been occupied with the Supplies Department, and I wish to thank the Director of Supplies, the Deputy Controllers of agricultural produce and the agencies concerned with marketing of the various crops for their assistance always readily given.

A. S. RICHARDSON,  
*Director of Agriculture.*



## ANNUAL REPORT 1944/45 EASTERN PROVINCE.

## PART I.—ADMINISTRATIVE.

## 1. Weather.

During the second half of 1944 good well distributed rains fell ; in many parts above average in quantity. As the cotton crop was late planted owing to the previous rather unsatisfactory spring rains, this crop benefited considerably, as did the sweet-potato crop. The unsatisfactory weather history of the last few years was unfortunately not terminated, as once again abnormal conditions intervened in 1945 ; the spring rains were delayed until May, causing considerable delay in the planting of food crops, and grazing difficulties in the pastoral areas.

## 2. The 1944/45 Cotton Crop.

## (a) PLANTING FIGURES IN ZONES BY MONTHS (ACRES).

| Zone.               | April. | May.   | June.  | July.   | Aug.    | Sept. | Total.  |
|---------------------|--------|--------|--------|---------|---------|-------|---------|
| Busoga .. ..        | ..     | 6,727  | 23,977 | 99,717  | 86,535  | ..    | 216,956 |
| North Central ..    | ..     | 3,778  | 17,017 | 60,060  | 40,111  | 1,608 | 122,574 |
| South Central ..    | ..     | 1,796  | 13,959 | 47,281  | 38,008  | 20    | 101,064 |
| Usuku .. ..         | 1,169  | 12,985 | 3,619  | 1,906   | 757     | ..    | 20,436  |
| North Teso .. ..    | ..     | 5,857  | 13,893 | 17,416  | 5,655   | ..    | 42,821  |
| Segregated Areas .. | ..     | 4,131  | 8,323  | 12,596  | 7,301   | ..    | 32,351  |
| South Teso .. ..    | ..     | 5,634  | 11,933 | 23,343  | 8,929   | ..    | 49,839  |
| South Lango-Teso .. | ..     | 1,509  | 4,098  | 7,751   | 3,799   | ..    | 17,157  |
| TOTAL ..            | 1,169  | 42,417 | 96,819 | 270,070 | 191,095 | 1,628 | 603,198 |

## (b) TOTAL PURCHASES OF SEED COTTON BY ZONES (TONS).

| Zone.               | Nov. | Dec. | Jan.   | Feb.   | March. | April. | Total. |
|---------------------|------|------|--------|--------|--------|--------|--------|
| Busoga .. ..        | ..   | ..   | 11,553 | 17,599 | 5,814  | 72     | 35,038 |
| North Central ..    | ..   | ..   | 8,245  | 5,400  | 2,317  | ..     | 15,962 |
| South Central ..    | ..   | ..   | 3,986  | 3,350  | 892    | ..     | 8,228  |
| Usuku .. ..         | 339  | 245  | 142    | ..     | ..     | ..     | 726    |
| North Teso .. ..    | ..   | ..   | 1,005  | 627    | 90     | ..     | 1,722  |
| Segregated Areas .. | ..   | ..   | 1,165  | 1,062  | 631    | ..     | 2,858  |
| South Teso .. ..    | ..   | ..   | 3,220  | 1,391  | 525    | ..     | 5,136  |
| South Lango-Teso .. | ..   | ..   | 491    | 424    | 181    | ..     | 1,096  |
| TOTAL ..            | 339  | 245  | 29,807 | 29,853 | 10,450 | 72     | 70,766 |

## (c) WEIGHTED AVERAGE PRICES PAID FOR EACH QUALITY FOR THE SEASON AND AVERAGE YIELD PER ACRE BY ZONES.

| Zones.              | A. Quality. | C. Quality. | Yield per acre in Lbs. |
|---------------------|-------------|-------------|------------------------|
| Busoga .. ..        | 15/-        | 3/50        | 362                    |
| North Central ..    | 14/50       | 3/50        | 292                    |
| South Central ..    | 14/50       | 3/50        | 182                    |
| Usuku .. ..         | 12/-        | 3/50        | 80                     |
| North Teso .. ..    | 13/50       | 3/50        | 90                     |
| Segregated Areas .. | 13/50       | 3/50        | 198                    |
| South Teso .. ..    | 13/50       | 3/50        | 231                    |
| South Lango-Teso .. | 13/50       | 3/50        | 143                    |

## (d) QUANTITY BOUGHT OF EACH QUALITY FOR SEASON IN TONS.

| Zone.               | A.     | C.    | Total. |
|---------------------|--------|-------|--------|
| Busoga ..           | 34,793 | 245   | 35,038 |
| North Central ..    | 15,461 | 501   | 15,962 |
| South Central ..    | 8,109  | 119   | 8,228  |
| Usuku ..            | 714    | 12    | 726    |
| North Teso ..       | 1,660  | 62    | 1,722  |
| Segregated Areas .. | 2,485  | 373   | 2,858  |
| South Teso ..       | 4,882  | 254   | 5,136  |
| South Lango-Teso .. | 979    | 117   | 1,096  |
| TOTAL ..            | 69,083 | 1,683 | 70,766 |

*Pests and Diseases.*—Early planted cotton suffered severely from *Lygus* damage. It was, however, fortunate that weather conditions, although unfavourable for early planting, eventually proved to be beneficial to the late planted crop. Other pests and diseases were negligible.

*Increase of New Varieties.*—B.P.52 was extended from a selected area in West Budama to the whole of the South Central Zone by introduction from Buganda. No reports from India on the crop are to hand, but it is believed that the quality is not quite so good as Buganda grown B.P.52. B.181 seed from Kawanda was used to sow the Lalle increase area in Teso and seed from the latter was used for the second increase stage (Kamod). The segregated areas were used to increase the Botanist's selected N.17 types. The Nakabango wave increase scheme was also used to increase N.17 selected types. The Botanist is satisfied with the purity of seed produced by the scheme as far as the Mutalla stage, though seed is lost due to preference of growers for a lorry ride to the ginneries. Purity after this stage descended badly, and the seed from the Gombolola stage was not worth further increase. The system is, however, being persevered with for the present.

*Marketing.*—The usual difficult question of arranging opening dates to avoid leakage of cotton between zones and countries was solved by the good will and willingness to give and take of the Senior Agricultural Officers, Masindi and Kisumu, with the result that there was uniform opening on the 15th January in the Eastern Province and adjacent areas, except for the usual early season in Usuku (6th November to 20th January). Buying was closed down during the second week in Busoga as a precautionary measure during the disturbances, otherwise marketing proceeded smoothly. Attempts were made in each district to form committees of buyers and growers under the chairmanship of Agricultural Officers for the purpose of determining grade. The results were generally not very satisfactory and recommendations for further action have been made.

Yields were a good deal more reasonable than in the previous difficult years, except in the northern parts of Teso, where continued low yields have given rise to concern for some time.

*The 1945/46 Cotton Crop.*—Although all precautions were taken to ensure the purity of the B.P.52 introduction to Budama, some impurity (up to 14%) was discovered by means of detailed seed sampling and counts by the Senior Botanist, and fresh seed was therefore sent from Buganda to resupply Budama, the Budama seed being used to "wash out" the areas of North Central and Kavirondo No. 3 area, where the seed is due to go next. B.181 seed went a stage further, but shortage of seed allowed little more than two Gombololas to be supplied (Rappayi, Gweri and Assuret area of Tira). Nevertheless the operation of this system gives considerable promise of being successful under the conditions ruling in the North Teso Zone.

The increase ratio in the Segregated Areas proved inadequate for the usual machinery of increase and some readjustment was necessary to continue the increase of improved N.17 varieties.

The lateness of the spring rains and incipient famine again in certain areas of all districts has made it essential to concentrate on food crops with the result that cotton planting is again behind hand.

### 3. Arabica Coffee.

*Agronomy.*—The campaign for betterment of general cultivation and treatment continued. All the essential points were incorporated in a printed notice issued to Gombolola Headquarters and Chiefs, and the latter have been issued with coffee books in which are recorded bad plots and the time limit for betterment or uprooting under Native Authority rules. The general result was satisfactory, except for the removal of *Digitaria* which is spreading. To help remedy this, "lumbugu forks" were purchased and let out on hire, and more are on order. The planting of shade at lower altitudes increased but is by no means universal. Wash breaks were more common, but uprooting while cultivating, and neglect have still to be overcome. The system of distributing tufts of *Paspalum* and *Vetiver* to seedling recipients continued.

*Pests and Diseases.*—*Antestia* and *Stephanoderes* were reduced in numbers. *Bixadus* has been reported but in most cases was dealt with fairly efficiently.

*Marketing.*—The crop was an intermediate one of 2,705 tons parchment. Although insect damaged beans were less than last year, quality was nevertheless poorer, due mainly to over-ripe cherry, in spite of increased departmental and Bugishu Coffee Marketing Company's propaganda. The price per lb. for Scheme parchment (equivalent) was 25.8 cts. per lb., and for native prepared parchment 25 cts., the approximate value of the crop to growers being £73,740. The working of the Coffee Growers' Club was satisfactory; out of 5,893 débés sold, 5,635 were classified for premium, but extension of this system is impossible unless the club gains a reputation for selling only good coffee, owing to the cost of supervision. For the next step the club has been warned that premium coffee only must be offered in future, and extension has been limited to four more clubs as a further guide to practicability.

*A Replacement Scheme* on a ten years' uprooting basis was commenced experimentally in Central Bugishu. Although receiving the support of the Central Bugishu Council prior to inception, the actual operation aroused considerable suspicion and difficulties due to the belief that the registration was connected with Government designs on the land. At the time of writing, however, it is believed that these have died down, and the main agitators have been traced. 237,775 seedlings were issued in the district in the normal way, making the total number of seedlings issued to date (excluding replacements) 10,757,286.

*Central Bugishu Self Management Scheme.*—For the first time the Bugishu District Council ran all aspects of buying as agent for the Bugishu Coffee Marketing Co. The scheme was successful in its working and will be continued, subject to a satisfactory financial report.

### 4. Oil Seeds.

Maximum production was again aimed at, but famine conditions caused much of the crop to be eaten.

The 1944/45 crop marketed was as follows :—

|              |           | Groundnuts<br>as Shelled. | Simsim.    |
|--------------|-----------|---------------------------|------------|
|              |           | Tons.                     | Tons.      |
| Busoga       | ..        | 1,345                     | 59         |
| Mbale        | ..        | 460                       | 12         |
| Teso         | ..        | 1,170                     | 522        |
| <b>TOTAL</b> | <b>..</b> | <b>2,975</b>              | <b>593</b> |



To stimulate production for the 1945/46 crop, and in view of depleted seed reserves due to famine, a considerable issue on sale at 10 cts. per lb. was made from the Busoga unshelled groundnuts that had been reserved, namely 276 tons in Busoga, 126 tons in Mbale, and 100 tons in Teso. Prices were also raised from 10 cts. to 12 cts. per lb. Weather has, however, again been unfavourable.

### 5. Maize.

Maximum production was aimed at, and 289 tons of seed were sold to growers, including 54 tons of once grown Kenya yellow maize. Sales were :—

|                 | <i>Total<br/>Purchases.</i> | <i>Passed for<br/>Export.</i> | <i>Rejected.</i> |
|-----------------|-----------------------------|-------------------------------|------------------|
|                 | <i>Tons.</i>                | <i>Tons.</i>                  | <i>Tons.</i>     |
| Busoga .. ..    | 4,575                       | 2,828                         | 373              |
| Mbale .. ..     | 1,908                       | 601                           | 122              |
| <b>TOTAL ..</b> | <b>6,483</b>                | <b>3,429</b>                  | <b>495</b>       |

A great deal of difficulty was experienced in export inspection with wet maize, also weevily maize, and as an inordinate amount of time was taken up by the staff for this comparatively minor crop, it was decided in 1945 to leave the export production to Buganda, and arrangements were made for production round the mills for local consumption, the Government guarantee to purchase being removed.

### 6. Rice.

Maximum production was aimed at, but although the acreage reached 51,000 acres, compared with 31,000 acres in the previous season, vagaries of weather, blast disease, reluctance of the growers to follow advice in the matter of swamp planting and famine, contributed jointly to limited sales, which were :—

|                 | <i>Paddy.</i> |
|-----------------|---------------|
|                 | <i>Tons.</i>  |
| Busoga .. ..    | 925           |
| Mbale .. ..     | 1,023         |
| Teso .. ..      | 126           |
| <b>TOTAL ..</b> | <b>2,074</b>  |

After reserving seed for issue to growers on payment in 1945, 1,166 tons of clean rice were handed over to the Controller of Prices and Distribution. The rice milling organisation is now working smoothly, though, with the war-time machinery available, neither outturn nor quality is up to standard. The Manager of the Bugishu Coffee Marketing Co. visited Mwanza and on his return gave advice on utilising the machinery to the best advantage.

For the 1945/46 season similar conditions to those referred to above are again likely to militate against a good crop for sale although a great deal of work has been put into numerous demonstration plots in the last two years.

### 7. Wheat.

The popularity of wheat as a food in Bugishu is extending, but not as a cash crop. A final attempt to market the crop resulted in 2½ tons being sold at 10 cts. per lb.

### 8. Soya Beans.

In Busoga the progress of this crop is disappointing. The 64 tons of seed issued in the spring of 1944 at the nominal price of 4 cts. per lb. were mostly eaten instead of being sown and only 11 tons were marketed. In the spring of 1945, 46 tons were again imported from Buganda and sold at 9 cts. in the hope that the higher cost would prevent the seed being used as a cheap food ; of this, 36 tons have had to be sold to the Soya Bean Factory as they were not taken up. In Mbale 10 tons of seed were imported and sold to growers and a market will be offered departmentally to extend seed supplies. It is thought that, even if soya beans do not become a cash crop, the offer of a price may stimulate production for food and thus improve the diet of the people.

### 9. Fruit.

Purchases of hard fruit under the control amounted to 2386.94 tons of which 1849.02 tons were exported to the East African War Supplies Board, after local military requirements had been met.

As supply exceeded demand during September to November, the agents to the control restricted buying. Although control was lifted to allow other buyers the opportunity to buy up the surplus, this had no effect, the traders saying that they had no time to make or renew trade connections. The result was that fruit rotted in Uganda, while if the correspondence column of the *East African Standard* is correct, civilians went short in Kenya. A considerable amount of time has been devoted in an endeavour to rectify the position for future years but with no success.

### 10. Vegetables.

Owing to the numerous difficulties encountered, the Government's obligation to growers regarding purchase was withdrawn, and the Mbale vegetable scheme was left to the laws of supply and demand, with general encouragement. As a result a very small irrigated crop was grown and vegetables have been in short supply for both military and civilian use during 1945 ; 113 tons were bought during the year under the scheme.

### 11. Shea Butter Nuts.

Marketing during the 1944/45 season resulted in 890 tons being bought at 10 cts. per lb., a slight reduction on the previous year. The different firms interested arrived at a buying agreement among themselves.

### 12. Pigeon Peas.

A total of 15½ tons was bought through recognised channels, but the crop had a high black market value and it is felt that much of the crop found its way to that destination, in spite of the great amount of time devoted to attempts to solve the problem.

### 13. Food Crops and Famine.

The famine conditions reported last year led to the distribution of over 11,000 tons of famine food during 1944. The heavy autumn rains resulted in a bumper crop of sweet-potatoes, much of which was sliced and dried, and had the 1945 rains broken at the proper time, peasant food reserves would have sufficed. While the new threat of famine has not developed as feared, the general future food position continues to hang in the balance, as any further vagaries in the weather will continue to prevent reserves being built up, if not causing further famine. Organised efforts continued to be made to provide "carry over" plots of sweet-potatoes for cuttings, to stimulate lake shore, swamp or irrigated planting of food crops according to the nature of local facilities, and to increase as rapidly as possible mosaic resistant types

of cassava and get them established in plots convenient to the growers for supply of planting material. Special attention, and preference of supplies, was given to Teso where the mosaic position is worst. Pending increase of new varieties, sufficient cuttings of the Bitaminsa variety were bought up in Busoga and planted on 4 acres on each Prison Farm, 3 acres on each increase centre and to establish Muruka plots in 4 Gombololas. In 1945, arrangements went well forward to establishing the Botanist's new selected varieties on 5 acre blocks at each Gombolola in the Amuria Division which requires assistance most. In other districts increase plots of the Bitaminsa variety were maintained and extended. The small millet crop promised to give but a moderate yield, but where sorghum was planted it grew well.

Increase plots of tepary beans were grown at introduction centres or Gombololas in each district. At one time demand outstripped ability to supply, owing to its great usefulness as a catch crop and the small amount of work entailed in growing it, but demand has now slackened considerably in many places.

#### 14. Education.

*Makerere Students.*—Five students were in residence at Serere for the 4th year practical course. Agricultural Officers continue to co-operate where possible with Makerere by finding holiday employment for students of other years who apply to them.

*Apprentice Courses at Serere.*—This one year's practical course continued to function in a very satisfactory manner, a quota being trained for the Western Province, and five Karamoja instructors were trained in preparation for increased agriculture in that district. The demand from Agricultural Officers is so great that the numbers rose to unmanageable proportions (33) and it has been necessary to limit the number strictly to 20 for the future.

*Cultivators' Courses.*—Fifteen courses of one week each were held, consisting of groups from single small areas, of peasants, clan leaders, Chiefs and local notables. All districts sent parties, including Karamoja which sent a party for the first time. These courses continue to prove their value, especially where it is possible for the field staff to visit the area afterwards and carry out "follow up" work.

*Women Instructors.*—Owing to the fact that it is difficult for the Department, with its male staff, to convince women cultivators regarding crops that they regard as peculiarly their own, an experimental apprentice course of one year's duration was conducted with six women, from Busoga, Mbale and Teso. No pronouncement on the scheme can be made until they have worked in their areas, and it is seen, not only what they have learnt, but to what extent they will be accepted by the community. Acknowledgment is made to the Organising Instructress in Domestic Science for advice and assistance in drawing up the training programme.

*Prison Warders' Course.*—One course of four weeks' duration was held for Busoga Prison Headmen.

*Rural Assistants.*—The two years' course for ten men from the Eastern and Western Provinces commenced in August, 1943, continued during the year. The course comprises instruction in agriculture, hygiene, building, forestry, animal husbandry and recognition of animal diseases, simple carpentry and blacksmith's work. The students vary widely in educational background (from Primary III to Secondary III), owing to the differing educational status of the districts from which they are drawn. They have shown a differential response to the various aspects of training, and some will be good at cattle work, others at building, etc. The ultimate functions of these men are still under discussion, but if they are returned to their districts as Rural Assistants, it is proposed that they should concentrate on the work in which they have shown most interest and ability, equated with the type of most pressing work in their particular areas, and provisional discussions have commenced with District Teams to this effect.



### 15. Karamoja.

The Provincial Agricultural Officer, Jinja, was Secretary of the Karamoja Anti-Desiccation Committee which formulated comprehensive plans for combatting the increasing desiccation of the district. As a commencement of the Agricultural Department's contribution, one Agricultural Officer was detailed for part time work in the district. The five Karamoja apprentices at Serere completed their training at the end of 1944 (being replaced at Serere by six more), and were posted to five plant introduction centres at Kangole, Kotido, Kaabong, Loyorait and Natakwai. The first of the buildings in cob were completed in some cases, in others lack of water held up building. The farms have been opened up and various introductions planted, but it is too early at this stage to report further, except to say that the late arrival of the rains disrupted plans considerably. Advice has been given to the Officer-in-Charge Police on the running of the Moroto Prison Farm, particular attention being given to the introduction of grass strips, the placing of trash wash breaks, and the leaving of vegetation along the sides of the large gullies. The Officer-in-Charge Police has been extremely co-operative and with the assistance of a very keen Chief Warder, all these suggestions have been put into immediate effect. Co-operation was maintained with the Lotome Bible Churchmen's Missionary School farm, this Department continuing the issue of new seeds, and a grant of Shs. 300/- was made towards the expense of a grazing management trial and the building of a cattle kraal. During the lengthy dry period of 1944/45, grass became extremely scarce, and there is little doubt that many cattle died of hunger and thirst. The growth of crops has likewise been retarded, and this, coupled with the poor 1944 harvest, has resulted in a great demand for imported maize meal, and free issues have been accepted by the Kari-mojong for the first time; although Liebig's cattle markets provide a source of cash, and a record number of cattle were offered for sale, it was not always possible to purchase all these animals owing to the difficulty of providing food along the stock routes.

### 16. Pests and Diseases.

*Locusts*.—A number of swarms of the Desert Locust were reported, but did little or no damage to crops.

*Wild Pig* continued to do serious damage to root crops in South Busoga, and are becoming a problem, related to increase of thorn (and reported leopard destruction in the past) in the Segregated Areas of Teso.

*Mosaic Disease* of cassava increased on susceptible varieties.

*Sweet Potatoes Virus*.—A survey indicated that the new virus is nowhere serious as yet.

*Blast Disease* of rice was responsible for considerable reduction in yields.

*Lygus* did severe damage to early planted cotton.

### 17. Miscellaneous.

*Agricultural Implements* were in short supply and cultivators had great difficulty in purchasing what supplies were available at controlled prices. To ameliorate the position, permission was obtained to sell a proportion of hoes through the Native Administrations. This method proved highly popular. The supply position progressively improved during the first half of 1945, but the demand is still unsatisfied, though cash for purchase is scarcer at the present mid crop season. A scheme tried in Mbale District to hire out Native Administration ploughs at Sh. 1/- per day generally failed, and is being retained only in four Gombololas that have made good use of the ploughs.

*Prison Farms.*—The Teso farms maintained their high standard of efficiency, and there was a great improvement in the conduct of the Busoga Farms, following active measures taken by the Administration and training of Headmen at Serere. In Mbale, farms were maintained or improved, but poor supervision was the limiting factor, and a prison warders' course at Serere has been planned to remedy this.

*Prizes for War Effort.*—To stimulate interest and competition in the production of crops required for the war effort, in food planting to alleviate famine and in good farming practice, illuminated certificates and a distribution of sugar, etc., were awarded to the 12 best Gombololas.

*Eggs.*—1,067,049 eggs were purchased under controlled marketing, of which 426,400 were exported to Kenya under the control of the East African War Supplies Board. The eggs were tested by electric candling plants, and a total of 441,061 were sold as tested.

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## ANNUAL REPORT WESTERN PROVINCE.

### PART I.—ADMINISTRATIVE.

#### 1. Staff.

Owing to an acute shortage of European staff it was only possible to station Agricultural Officers to Lango and Kigezi Districts throughout the period under review. For varying periods Agricultural Officers were available for work in West Nile and Bunyoro Districts; elsewhere Assistant Agricultural Officers were in charge of agricultural activities in their Districts.

#### 2. Meteorological.

In the northern half of the Province during the second half of the year 1944 rains were generally well distributed and above average and dry season conditions did not make their appearance until the third week of December. In Ankole and Kigezi, however, the normal dry spell in June and July persisted longer than usual and rains were not received until late in August. Weather conditions during January, 1945, were abnormal in that temperatures were generally not high and there was much cloud and some rain. Dry season conditions set in during February and persisted until the beginning of April in all Districts except Kigezi, with the result the planting of food crops was delayed by at least two months and the usual "grass rains" which normally occur in February did not make their appearance. Satisfactory rains were received in all districts during May and June.

#### 3. Cotton.

##### 1944/45 SEASON.

Weather conditions during July were generally favourable for cotton planting and a satisfactory acreage was achieved. The continuation of rains during August and September, although suitable for late plantings, increased the incidence of blackarm and *Lygus* and reduced the yields of early plantings. This was specially so in Lango, where the plants made much vegetative growth and "leaf reddening" became common as a result of cold weather and lack of sunshine. Heavy rains continued until December, with the result there was excessive vegetative growth and blackarm and boll shedding was above average. Picking started on a small scale in October, but was not in full swing until December. There was a good deal of stained cotton amongst the early pickings, especially in Lango, but late plantings gave much higher yields than usual. Marketing began in Lango, Acholi and Bunyoro on 15th January, in West Nile on 5th February and in Toro on 22nd February. Marketing was concluded in all areas by the 21st April, but continued in Toro until the middle of May.

Grade was below standard in Lango during the first three days of buying and measures had to be taken to enforce more careful picking over prior to marketing; these steps proved successful, but growers had to sell a higher proportion than usual of their cotton as "stained" cotton and much of this type of cotton in many areas was lost during uprooting and burning operations.

Elsewhere, grade was up to standard and particularly good in Bunyoro.



Prices payable to growers were fixed before buying commenced and were Shs. 2/- per 100 lbs. higher than in the previous season, except in Bunyoro where the price was increased by Sh. 1/- only. Growers were well satisfied with the prices paid. Figures relating to the crop are given below :—

| Zone.                | Acreage planted<br>Acres. | Production.<br>Tons. | Prices paid.<br>Shs. |      | Average yield<br>per acre lbs. |
|----------------------|---------------------------|----------------------|----------------------|------|--------------------------------|
|                      |                           |                      | A.                   | C.   |                                |
| North Lango ..       | 57,460                    | 6,314                | 13/50                | 3/50 | 246                            |
| South Lango ..       | 31,971                    | 2,342                | 13/50                | 3/50 | 167                            |
| Acholi West ..       | 15,863                    | 1,909                | 13/50                | 3/50 | 270                            |
| Acholi East Upper .. | 4,020                     | 306                  | 13/50                | ..   | 170                            |
| Acholi East Lower .. | 3,713                     | 462                  | 13/50                | ..   | 271                            |
| Bunyoro ..           | 15,323                    | 1,660                | 14/-                 | 3/50 | 243                            |
| West Nile Madi ..    | 16,653                    | 2,105                | 15/-                 | 4/50 | 283                            |
| Toro District ..     | 8,745                     | 970                  | 14/64*               | ..   | 248                            |
| TOTALS ..            | 153,748                   | 16,068               | ..                   | ..   | ..                             |

\*NOTE.—Graduated price based on Shs. 16/- for A.R.K.

#### 1945/46 SEASON.

*Seed Distribution.*—The only new introduction occurred in West Nile where B.P.52 seed, previously grown in East Madi for increase, was distributed throughout the West Nile Madi-Zone. As the Madi seed cotton was purchased and ginned at Rhino Camp prior to the opening of the buying season in West Nile, the cost of distributing this new seed was no more than in a normal season.

*Plantings.*—The prolonged dry season, combined with the need to plant up a large acreage of food crops as soon as possible, caused a delay in the cultivation of plots and very little planting was possible before June. Weather conditions being favourable and withdrawals of seed for planting purposes being high, it is anticipated that a normal, although late planted, acreage will be cultivated.

The following acreage, subject to revision later, was planted to the end of June :—

| Zone.                | Acreage to end<br>of June, 1945. | Acreage to end<br>of June, 1944. |
|----------------------|----------------------------------|----------------------------------|
| North Lango ..       | 9,449                            | 35,049                           |
| South Lango ..       | 2,860                            | 11,509                           |
| Acholi West ..       | 929                              | 6,406                            |
| Acholi East Upper .. | 985                              | 1,514                            |
| Acholi East Lower .. | 530                              | 1,009                            |
| Bunyoro ..           | 2,220                            | 2,277                            |
| West Nile Madi ..    | 275                              | 2,396                            |
| Toro ..              | 26                               | 196                              |
| TOTALS ..            | 17,274                           | 60,356                           |

#### 4. Coffee.

Very little interest was displayed in the cultivation of this crop except in Toro District. In Ankole, people preferred to grow annual crops (soya beans and groundnuts) as "cash" crops, at the expense of coffee, with the result many plots have been allowed to fall into neglect and little planting has taken place. Efforts are being directed to bringing semi-abandoned plots

back into cultivation (by stumping and removal of couch grass) and to planting a new series of plots. Sales for the period under review were 60 tons Arabica and 15 tons Robusta.

In Kigezi, there is very little interest in the crop, partly due to the damage caused by *Antestia*. In the post-war period, by the use of pyrethrum dust as a control for this pest, the industry may be revived (pyrethrum for this purpose could be grown by cultivators themselves). Total sales amounted to 41 tons Arabica (in the peak period of 1942 sales amounted to 339 tons).

Little more interest was displayed in West Nile and Bunyoro; in the former, sales amounted to 2 tons of Arabica only.

The acreage under Robusta coffee in Bwamba (Toro) continues to increase and, including the number of new coffee plants (57,497) distributed during the year, the present acreage amounts to 2,190 acres. The improvement in pruning, reported in my previous annual report, has not been maintained as growers have refused to pay the official pruners their fees and as a result the trees are generally not pruned. A small group of ten enlightened growers has, however, agreed to prune and mulch their plots and it is hoped to extend the number in this group.

Marketing, as in previous years, was in the hands of Messrs. The Old East African Trading Company buying under an Exclusive Licence, but operating under the Coffee Control. Sales amounted to 299.5 tons and the price paid was 28 cts. per lb., the same as in the previous period.

Throughout the remainder of Toro, following a record crop in the previous year, sales were on a reduced scale and amounted to 85 tons Arabica and 3 tons of Robusta. The high price (32 cts. per lb. for Arabica) is encouraging planting and there is a considerable demand for seedlings but, as in Bwamba, growers refuse to employ the official pruners and as a result this operation is badly neglected. *Antestia* continues to spread and is now to be found practically throughout the district.

## 5. Tobacco.

### FIRE AND AIR-CURED BUNYORO.

#### 1944/45 SEASON.

The total acreage planted was 3,539 acres, made up of 3,352 acres of fire-cured and 187 acres of air-cured tobacco. The two main reasons for the reduction in acreage planted were unfavourable weather at planting time and the increase in the cultivation of food crops for sale locally at remunerative prices. In spite of a poor start, the crop made good growth in the fire-cured areas, but very wet conditions during August made curing, especially of the air-cured leaf, difficult. In addition, in certain air curing areas the crop suffered considerably from "frog-eye" and as a result growers were not keen to continue growing this type of leaf in spite of compensation being paid to them from Tobacco Cess Funds for loss of crop due to disease.

Marketing opened on 2nd October and continued until the end of November. Messrs. The British American Tobacco Company, The East African Tobacco Company and Mr. D. N. Stafford (buying on behalf of certain exporters) were the only buyers operating in the fire-cured areas and Messrs. The British American Tobacco Company (buying on their own behalf and that of Messrs. The East African Tobacco Company and Messrs. The Nile Industrial and Tobacco Company) was the sole buyer in the air-cured areas.

Marketing proceeded slowly and orderly. There were no difficulties at any of the markets although heavy rain held up marketing on several occasions. On the whole, the quality of the leaf was better than in the previous year. The prices paid to growers remained the same as in the previous year, *i.e.*,

Grade I, 30 cts. per lb., Grade II, 20 cts. per lb. Crop statistics given below show comparison with the previous season :—

|    |                                                  |                     |    |    | <i>Buying Season.</i> |              |
|----|--------------------------------------------------|---------------------|----|----|-----------------------|--------------|
|    |                                                  |                     |    |    | <i>1944.</i>          | <i>1943.</i> |
| 1. | Number of growers                                | ..                  | .. | .. | 7,365                 | 14,147       |
| 2. | Acreage planted :—                               |                     |    |    |                       |              |
|    | (a)                                              | Fire-cured          | .. | .. | 3,352                 | 8,783        |
|    | (b)                                              | Air-cured           | .. | .. | 187                   | Nil          |
|    | TOTAL                                            | ..                  | .. | .. | 3,539                 | 8,783        |
| 3. | Average yield per acre lbs. of cured leaf :—     |                     |    |    |                       |              |
|    | (a)                                              | Fire-cured          | .. | .. | 412                   | 427          |
|    | (b)                                              | Air-cured           | .. | .. | 246                   | Nil          |
| 4. | Total purchases :—                               |                     |    |    |                       |              |
|    | (a)                                              | Fire-cured, Grade 1 | .. | .. | 683,319               | 1,666,527    |
|    |                                                  | Fire-cured, Grade 2 | .. | .. | 709,736               | 2,087,268    |
|    | TOTAL FIRE-CURED                                 | ..                  | .. | .. | 1,393,055             | 3,753,795    |
|    | (b)                                              | Air-cured, Grade 1  | .. | .. | 23,177                | Nil          |
|    |                                                  | Air-cured, Grade 2  | .. | .. | 22,876                | Nil          |
|    | TOTAL AIR-CURED                                  | ..                  | .. | .. | 46,053                | Nil          |
|    | TOTAL FIRE AND AIR-CURED                         | ..                  | .. | .. | 1,439,108             | 3,753,795    |
| 5. | Percentage of Grade 1 :—                         |                     |    |    |                       |              |
|    | (a)                                              | Fire-cured          | .. | .. | 49.1%                 | 44.4%        |
|    | (b)                                              | Air-cured           | .. | .. | 50.3%                 | Nil          |
| 6. | Value of Crop (excluding compensation)           |                     |    |    | £17,924               | £45,871      |
| 7. | Hail and Fire compensation                       |                     |    |    | £1,818                | £1,757       |
| 8. | Average return per acre (including compensation) |                     |    |    | Shs. 111/56           | Shs. 110/77  |

The Masindi Tobacco Factory conditioned a total of 562,938 lbs. of leaf, which included some flue-cured leaf from Tanganyika, at the rate of 1.34 cts. per lb. of conditioned leaf. An African Factory Overseer was in charge of operations and carried out the work efficiently. A fire occurred in one of the smaller barns in October and destroyed the barn and 3,400 lbs. of leaf, but the remainder of the building was undamaged.

#### 1945/46 SEASON.

The target production was 3½ million pounds of fire-cured leaf and 200,000 lbs. of air-cured for local manufacture. Germination in the nursery beds was satisfactory, but lack of rain by the end of February caused some of the springs to dry up and, with the continuation of these conditions until April, the position became progressively worse; some nurseries had to be abandoned and, although it was possible to keep most of the nurseries watered, by the time suitable planting weather occurred, many of the plants had become too big for successful planting out in the field. The result was that there was an acute shortage of plants and as growers were keen to grow an increased acreage, many plants which in a normal year would have been discarded as unsuitable, were in fact used. Plots therefore were frequently "gappy" and contained weakly plants. Planting out was done from the end of April until the 20th May and the total acreage was 5,249 acres. Conditions during June were favourable for growth, but in view of the total crop not being likely to exceed 2 million lbs. of cured leaf, it was decided to grow an autumn crop of fire-cured leaf in selected areas in an endeavour to make good the deficit.



## AIR-CURED WEST NILE.

## 1944/45 SEASON.

The total acreage planted was 171 acres, compared to 240 acres in the previous season. As stated in my Annual Report for 1944, the crop had a poor start owing to the long dry season and general food shortages throughout the District. Weather conditions during growth were favourable for the crop, but hail storms during July resulted in some loss of leaf. As usual, difficulty was experienced in inducing growers to get their barns ready in time to receive the leaf. Marketing began on 25th September and was completed by the 11th October. The crop was purchased by the Agricultural Officer, West Nile, on behalf of the three Tobacco Manufacturers, to whom the leaf was consigned (Messrs. The British American Tobacco Company provided the funds to purchase the crop and did the actual distribution of conditioned leaf to the other manufacturers). The quality of the leaf was a considerable improvement on that of the previous year. The variety grown was Jamaica Wrapper. Prices paid were 30 and 20 cts. per lb. for Grades I and II respectively.

Crop statistics for the past two seasons are as follows :—

|                                                            |    |    |    |    | <i>Buying Season.</i> |                    |
|------------------------------------------------------------|----|----|----|----|-----------------------|--------------------|
|                                                            |    |    |    |    | <i>1944.</i>          | <i>1943.</i>       |
| 1. Number of growers                                       | .. | .. | .. | .. | 650                   | 1,044              |
| 2. Acreage                                                 | .. | .. | .. | .. | 171                   | 240                |
| 3. Purchases, Grade I in lbs.                              | .. | .. | .. | .. | 14,612                | 44,578             |
| Grade II „                                                 | .. | .. | .. | .. | 15,957                | 39,066             |
| TOTAL lbs.                                                 | .. | .. | .. | .. | 30,569                | 83,644             |
| 4. Total Cash value                                        | .. | .. | .. | .. | Shs. 7,575            | Shs. 21,186/60     |
| 5. Yield per acre (lbs.)                                   | .. | .. | .. | .. | 179                   | 348                |
| 6. Average Cash return per acre (excluding compensation)   | .. | .. | .. | .. | Shs. cts.<br>44 35    | Shs. cts.<br>88 28 |
| 7. Average Cash return per grower (excluding compensation) | .. | .. | .. | .. | 11 65                 | 20 29              |
| 8. Hail and Fire compensation                              | .. | .. | .. | .. | 1,785 79              | 1,637 50           |

## 1945/46 SEASON.

At the beginning of 1945 it was hoped that a much larger acreage would be planted compared to previous years, as growers appeared definitely more interested in the cultivation of this crop. Unfortunately, weather conditions were similar to the previous year, swamps dried up making the watering of nurseries a difficult undertaking and the acreage was limited by the quantity of seedlings available rather than by the number of growers. 230 acres were planted by the middle of May, but there was a great shortage of suitable seedlings, as many were over age before transplanting became possible. Weather conditions immediately following transplanting were too dry for really successful growth and by the end of June plots were very gappy and growth irregular. The total crop is not likely to exceed 40,000 lbs. of marketable leaf.

## FLUE-CURED WEST NILE.

## 1944/45 SEASON—1ST CROP.

The acreage planted in April, 1944, at Terego, amounted to 86 acres, of which 13 were planted with Hickory Pryor, 14 with White-stemmed Orinoco and 59 with Jamaica Wrapper. Weather conditions in the early growing period were not favourable but improved in June. "Frog-eye" disease was again present, but the outbreak was not serious. Curing began

on 11th July and proceeded at high pressure during August. A satisfactory percentage of "brights" was obtained and, in spite of lack of close European supervision, the standard of curing was of a high order and an improvement on previous seasons. A total of 204,939 lbs. of green leaf was purchased from growers, a quantity too great for the capacity of the Factory to handle, and, as it was impossible to cure the whole of the crop, the balance was air-cured. After grading, the crop was sold to the three Tobacco Manufacturers in equal proportions, at the price of Shs. 1/50 per lb. (all grades) for flue-cured and 50 cts. per lb. air-cured leaf.

Crop statistics are as follows :—

|                                                                 | 1st Crop 1944. | 1st Crop 1943. |
|-----------------------------------------------------------------|----------------|----------------|
| 1. Number of growers . . . . .                                  | 257            | 182            |
| 2. Acres . . . . .                                              | 86             | 60             |
| 3. Number of Plots . . . . .                                    | 257            | 171            |
| 4. Total purchases green leaf (lbs.) . . . . .                  | 204,939        | 174,698        |
| 5. Average yield per acre green leaf (lbs.) . . . . .           | 2,333          | 3,176          |
| 6. Total saleable flue-cured leaf (lbs.) . . . . .              | 19,800         | 17,688         |
| 7. Total saleable air-cured leaf (lbs.) . . . . .               | 1,860          | 594            |
| 8. Total saleable flue and air cured leaf (lbs.) . . . . .      | 21,660         | 18,282         |
| 9. Yield of cured leaf (air and flue) per acre (lbs.) . . . . . | 252            | 332            |

In addition, 9,371 lbs. of green leaf, the produce from the experimental and seed plots, was processed at the Terego Factory.

The following varieties were tested and gave yields as under in lbs. of cured leaf (calculated from green leaf) :—

| Variety.                        | Yield per acre (lbs. cured leaf). |           |
|---------------------------------|-----------------------------------|-----------|
|                                 | 1944.                             | 1943.     |
| Ammorello . . . . .             | 1,296                             | not grown |
| Willow leaf . . . . .           | 877                               | 432       |
| Yellow Mammoth . . . . .        | 757                               | 636       |
| White Stemmed Orinoco . . . . . | 694                               | 508       |
| Jamaica Wrapper . . . . .       | 543                               | not grown |
| Cash . . . . .                  | 484                               | 504       |

The variety Ammorello, which yields well and is easy to cure, is unfortunately not suitable to the trade and will henceforth be excluded from trials.

#### 1944/45—2ND CROP.

Delay in the preparation of plots by growers resulted in most of the seedlings for the second crop being past the optimum stage for planting. Eventually, only 10 acres were planted and the plots were very gappy and the crop made poor growth. Harvesting began on 27th December, but on account of dry season conditions it was found almost impossible to cure the small crop of 1,001 lbs. of green leaf satisfactorily and only 144 lbs. (or 14.4% outturn) of saleable leaf resulted. Owing to the difficulty in curing, apathy on the part of growers to plant a second crop which is seldom successful, and as a measure of plant hygiene, it has been decided to discontinue the planting of a second crop in future.

#### 1945/46 CROP.

171 growers were registered, but the prolonged dry season caused a delay in the preparation of beds and some were lost owing to damage by white ants. Germination was generally satisfactory and transplanting took place between the 12th and 15th May, but there was a shortage of seedlings so that it was not possible to select only the best for planting. A total of 47 acres were planted, but dry weather following this operation resulted in many vacancies.

*General.*—A representative of Messrs. The British African Tobacco Company, visited Terego in September, 1944, at the request of the Department, to see flue-curing in progress. He reported very favourably on the quality of the leaf produced and was much impressed with the work of the African staff who undertake the curing. A return visit by two of the staff to Messrs. The British African Tobacco Company's farm at Kitui in Kenya later in the year, to see the flue-curing work in progress there, was highly instructive and should be of great value to them in the future.

Little progress can yet be reported regarding the attitude of growers themselves in the Terego area and they have yet to learn to prepare their plots in readiness to receive the seedlings grown for them in the nursery beds.

### HIGH NICOTINE CONTENT TOBACCO, KIGEZI.

This small industry continues to expand satisfactorily and, although growing conditions have not been ideal, satisfactory yields are being obtained. A limiting factor is the ability of the firm which purchases the leaf for the production of nicotine sulphate, to solve difficulties in connection with evaporating tanks; until these difficulties are solved the acreage under the crop is dependent on the immediate capacity of the Factory to deal with the leaf produced, as nicotine in the leaf is lost during the process of storage. The acreages planted during the year therefore were based on the immediate Factory requirements.

The spring 1944 crop suffered from dry weather from mid-May to mid-August, and "cutworms" damaged the autumn crop at the planting out stage. Statistics relating to the two crops are given below:—

| <i>Date planted.</i> | <i>Acreage.</i> | <i>Total crop lbs.</i> | <i>Yield per acre lbs.</i> |
|----------------------|-----------------|------------------------|----------------------------|
| Spring 1944 ..       | 259             | 137,317                | 530                        |
| Autumn 1944 ..       | 275             | 185,528                | 673                        |

Following a firm offer for Nicotine Sulphate from South Africa it was decided to extend the acreage in Kigezi in the spring of 1945 and the total acreage planted was 378 acres. Arrangements were also completed to extend the cultivation of this crop in Buhwezhu county of Ankole in the autumn of 1945; it is planned to grow 100 acres in the first instance.

### 6. Oilseeds.

As in the previous year maximum acreages of both groundnuts and simsim were again called for, and as growers responded well, target acreages were generally achieved. The prolonged dry seasons in 1944, and again in 1945, were responsible for growers becoming extremely worried regarding their own food supplies and, as a result, a greater quantity than normal of their produce was either consumed or stored against an emergency and did not reach the organised markets. The main simsim crop in Lango has, from one cause or another, largely failed for the past three seasons, which demonstrates the unreliability of simsim as a "cash" crop.

#### (a) SIMSIM: 1944 Planted Crop.

Weather conditions were generally unfavourable for this crop. In Lango, during July the weather was too dry for successful growth and in September heavy rains affected the germination of the autumn sown crop in Lango and Acholi also. Gall midge also damaged the earlier plantings at the flowering stage. On the other hand the smaller Bunyoro crop gave excellent yields and the West Nile crop was up to average. Total sales amounted to 854 tons.



### 1945 Planted Crop.

The spring sown South Lango crop was far less than normal due to the late onset of the spring rains (acreage 4,730 acres, compared to 18,628 acres in the previous year) and sales are likely to be much reduced. A crop of over 6,000 acres had been planted in Bunyoro and this gave promise of excellent yields. The Acholi, North Lango and West Nile crops are planted in the autumn rains only.

### (b) GROUNDNUTS: 1944 Planted Crop.

In the principal producing areas, Ankole and Lango (the latter received 600 tons of seed early in 1944 for increased planting) dry weather in May and June retarded growth and yields were fair in Lango, but much below average in Ankole. Growers in Lango showed unwillingness to dispose of their crop and only 326 tons (unshelled) were sold, the produce from 22,022 acres; the balance being consumed. The Ankole autumn crop grew well and produced a good yield and the total sales from the spring and autumn crops amounted to 577 tons. Total sales throughout the Province amounted to 928 tons. Growers received 10 cts. per lb. (shelled) and 6 cts. per lb. (unshelled) for their crop in all districts.

### 1945 Planted Crop.

The late start of the rains held up planting operations until April in all districts. Although this is past the optimum planting time for this crop and a great deal of the acreage was not put in until May, prospects of average yields are not unpromising.

### (c) SHEA BUTTER NUTS.

Demand for these nuts for the production of oil continued. As was expected following two years of exceptionally heavy yields, the 1945 crop is a light one. Owing to the partial failure of the 1944 autumn sown simsim crop, and the food shortage early in 1945, considerable quantities of nuts were consumed in the home and sales are likely to be small. No sales have taken place in West Nile. Total purchases to the end of June were 338 tons, all but 4 tons emanating from Lango District.

## 7. Flax.

Development of this industry has proceeded satisfactorily although, owing to the difficulty in obtaining machinery for the Factories, there are still large accumulations of straw to be processed and for this reason it has not been possible to extend the acreage under this crop.

Owing to unfavourable weather the 1944 spring planted crop was below average, both as regards yield of straw and seed (planting was confined to Kigezi only). Weather conditions were more favourable for the 1944 autumn planted crop, grown in Ankole as well as Kigezi, and as a result yields were up to average. Particularly promising results have been obtained from the crop grown in Ankole near the Kigezi border. The spring 1945 crop was late planted and weather conditions being by no means favourable (April was particularly dry) yields are expected to be below average.

Crop statistics relating to the last two crops are as follows :—

|                                     | Autumn 1943 crop. | Spring 1944 crop. |
|-------------------------------------|-------------------|-------------------|
| Number of plots .. .. .             | 4,241             | 3,673             |
| Acreage .. .. .                     | 530               | 459               |
| Straw purchased (tons) .. .. .      | 345.2             | 248.7             |
| Seed purchased (tons) .. .. .       | 45.14             | 23.0              |
| Average yield per acre Straw (lbs.) | 1,459             | 1,213             |
| Average yield per acre seed (lbs.)  | 191               | 112               |
| Gross return per acre (Shs.) .. .   | 49/86             | 42/92             |

Details regarding the 1944 autumn crop are not yet available. During the period the water power installation at the Kisizi Factory was completed and 32 berths were in operation in December, 1944. The 16 berth Factory at Buyanza was completed in March, 1945, although it was possible to operate 13 rims only.

The outturn per scutcher is not high (the best scutcher can do about 25 lbs. of fibre per day) but with continued practice improvement is being made and the quality of the work is well up to standard. Experiments were made early in 1945 with pond retting and this method proving very satisfactory, four ponds were made at Kisizi.

Pond retting is now standard practice as it is possible to ret green straw throughout the year and be independent of suitable weather conditions for this process; in addition, fibre from pond retted straw has realised the highest price (£217 per ton as against £205 per ton for dew retted straw). The representative of the Ministry of Supply visited Kigezi in October, 1944, and again in April, 1945. Sales amounted to 40.8 tons of fibre and 33.3 tons of tow, with a total value of £10,654/4/9. The price of fibre varied from £217-£185 per ton and that of tow £100-£90 per ton.

### 8. Maize.

The policy in 1944 with regard to this crop was to endeavour to grow sufficient maize in Ankole and Bunyoro Districts to meet at least part of the demand of employers of labour. The crop grew satisfactorily, but marketing difficulties arose in both districts and the quality was poor owing to absence of drying facilities and the maize quickly became mouldy and weevily. A total of 909 tons was sold, which represented only a portion of local requirements. Owing to the above difficulties, no price guarantee was given in 1945 and sales are likely to be on a much reduced scale.

### 9. Rice.

Encouragement to produce rice for sale was instituted in Toro (Bwamba), West Nile and Lango in 1944, but yields in the two latter districts were poor and none of the crop produced was sold at organised markets. Over 1,200 acres were planted in Bwamba, and, weather conditions being satisfactory, good yields were obtained. Total sales amounted to 178 tons and this figure would have been exceeded had it not been for the fact that the local food position was poor and a large quantity was consumed by growers. This crop is now very popular in Bwamba and 2,000 acres were planted in the spring of 1945. Owing to damage by buffaloes to the swamp plantings in 1944, the whole of the present crop is upland planted; blast disease has occurred but a crop of 200 tons is confidently expected.

### 10. Soy Beans.

Although this crop is now grown in Ankole, Toro, Bunyoro and Lango, it is only in the first district that any progress has been made. In Ankole, however, the crop is very popular as it grows well and provides a cash crop in an area generally lacking economic crops; a number of people are beginning to eat the crop either green or after roasting. 2,630 acres were planted in the Autumn of 1944 and 3,060 acres in the spring of 1945. Total sales throughout the Province were 522 tons of which 478 tons were marketed in Ankole.

### 11. Wheat.

In 1944, production for export was confined to Toro as the food position in Kigezi did not allow any food leaving the district. In spite of growers being allowed to cultivate land for wheat production in the Ruwenzori Forest Reserve, under permit from the Forestry Department, sales totalled 70 tons only, the balance of the crop being consumed by the people themselves. In view

of the high cost of transport to Kampala (over 4 cts. per lb.) from Fort Portal and the improved cereal position in East Africa, no encouragement to grow this crop was made in 1945 and the price guarantee, which has been 7 cts. per lb. since 1942, has been withdrawn.

## 12. Other Food Crops.

The prolonged autumn rains in 1944 resulted in planting operations, especially of root crops, being continued longer than usual and sweet potatoes in particular gave good yields. In certain areas, notably West Nile, there was little reserve of food in the granaries and the future food position depended on the early start of the rains to enable the finger millet crop to be harvested in June, 1945. These hopes were, however, not realised and the dry season was prolonged until April, which caused a delay of two months in the spring planting programme. There were fears that assistance with food might have to be given in parts of Lango and West Nile to tide the people over until the harvest. Fortunately this was not necessary, but reserves of grain are very low and it will take some years to build up adequate reserves in the northern areas. The policy of enforced planting of cassava (it is compulsory for each taxpayer to plant 1 acre annually in West Nile and  $\frac{1}{2}$  acre in Lango and Acholi) undoubtedly saved the situation, coupled with good yields from the late planted mtama crop. There are large acreages under cassava, but the crop is heavily attacked by mosaic disease and individual yields may be low. Small plots of mosaic resistant cassava varieties have been put down in many areas, but these have not yet been sent for distribution to increase centres as many varieties have shown symptoms of attack and have had to be heavily rogued.

Owing to the prolonged dry season and the consequent drying out of the swamps, sweet potato cuttings were very scarce in the northern areas at planting time and plots were therefore smaller than usual.

## 13. Miscellaneous.

(a) *Beans Mixed*.—Organised marketing took place in Ankole and Bunyoro Districts and sales amounted to 626 tons, all but 28 tons being purchased in Ankole.

(b) *Beeswax*.—Buying continued in Acholi, Toro and Kigezi, and total purchases amounted to 2,945 lbs. In Acholi, a quantity of honey is also exported from the district.

(c) *Onions*.—Exports from Toro, Ankole, and Bunyoro amounted to over 50 tons.

(d) *Pigeon Peas*.—89 tons were sold in Lango at organised markets.

## 14. Education.

In November, 1944, the Lango Native Administration Farm School and Stock Farm at Ngetta were taken over by the Department. It was originally intended to erect buildings in order to develop Ngetta into a Training Centre for courses in Agriculture for chiefs, cultivators, prison warders, etc. The programme is now much enlarged to accommodate 100 ex-soldiers who may require courses in Agriculture upon demobilisation and preparations for the erection of buildings by the Public Works Department are well in hand.

### RURAL ASSISTANTS.

(a) *Rural Assistant*.—The Lango Rural Assistant, was mainly engaged in grazing work in Lango during the period under review.

(b) *Rural Assistants in Training*.—These men, one each from West Nile, Lango and Acholi, are still undergoing their training at Serere started in 1943 and three others (two from Ankole and one from Bunyoro) have been undergoing instruction at Bukalasa since 1944.



### 15. Pests and Diseases.

(a) *Locusts*.—A number of swarms of Desert locusts were reported early in the year, but no egg laying took place and little damage was done to crops.

(b) *Blast Disease* of rice has done considerable damage to the Bwamba (Toro) rice crop.

(c) *Frog-eye Disease* has been very prevalent on the 1945 Bunyoro Air-cured Tobacco crop and has caused considerable loss of crop.

(d) *Antestia* continues to cause damage to coffee in Kigezi, Ankole and Toro and in the latter District the areas of infection continue to spread.

### 16. Hoes and Ploughs.

There has been an acute shortage of hoes throughout the Province and this factor has undoubtedly had some effect on cultivation. During 1945, however, a large number of small consignments have been received and the position is one of steady improvement.

Supplies of new ploughs, plough shares and spare parts for ploughs continued to present difficulty in Lango District. The total number of ploughs in this district increased by 93, but the number of ploughs actually in use increased by 39 only. No new ploughs were received in the district through normal trade channels and it is believed that the increase is due to trade by Africans over the Lango-Teso border. It is anticipated that there will be a big demand for ploughs in this district when once supplies come forward freely.

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## ANNUAL REPORT—BUGANDA PROVINCE.

*1st July, 1944, to 30th June, 1945.*

## PART I.—ADMINISTRATIVE.

## Staff.

On account of leave movements, staff changes were frequent during the year. The appointment of Provincial Agricultural Officer was held by three Officers with four changes in twelve months and in the districts there was an average of three changes per station over the same period. This unsatisfactory, although unavoidable state of affairs, reacted badly on work in the Province, particularly in respect of continuity of effort and in some areas little progress was made.

## Weather.

In the second half of 1944 the outstanding feature of the weather was the unusually good and prolonged "short" rains which were received in all districts. Autumn planted crops benefited considerably including cotton, but maize harvesting, preparation and marketing was rendered extremely difficult and grade suffered in consequence.

The spring rains of 1945 were very variable and although some areas of Mengo and Mubende received good rains in March, in others there was little effective rain until May. April was generally dry and in consequence there was high mortality among all early planted crops. Rainfall in Masaka was below normal during the first two months of 1945, but in subsequent months falls were generally well above average.

## Cotton.

## 1944-45 CROP—GENERAL.

The bulk of the crop was late planted and it was fortunate that the autumn rains were prolonged as they enabled steady growth to be maintained. Weather conditions at picking were also favourable and good yields and grade were on the whole obtained although stainer damage tended to be above average. Production statistics are summarized below:—

| Zone.            | Estimated Acres. | Sales Tons. | Average Yield/Acre Lbs. | Prices Paid Per 100 lbs. |      |
|------------------|------------------|-------------|-------------------------|--------------------------|------|
|                  |                  |             |                         | A.                       | C.   |
| Mengo-Entebbe .. | 260,523          | 60,878      | 523                     | 16/-                     | 3/50 |
| Mubende-Toro ..  | 58,658           | 11,810      | 451                     | 15/33                    | 3/50 |
| Masaka ..        | 22,268           | 3,374       | 359                     | 15/-                     | 3/50 |
| TOTALS ..        | 341,449          | 76,062      | —                       | —                        | —    |

## Segregated Areas.

## KAWANDA SEED FARM.

212 acres were planted with variety B.P.52 derived from the 20 acre increase. Growth was satisfactory and a total crop of 55·5 tons was bought, giving an average yield per acre of 586 lbs.

## BUGERERE.

B.P.52 from Kawanda was planted in south Bugerere and north Bugerere was supplied from Bale ginnery. An estimated acreage of 7,089 acres was

planted and sales totalled 1,733·2 tons as compared with 968·25 tons in the previous season. Yields were high and averaged 548 lbs. per acre as against 213 lbs. per acre in 1943.

#### ENTEBBE PENINSULA.

This segregated area has proved a disappointing choice in all respects other than geographical. The inhabitants are not interested in cotton cultivation and annual acreages are steadily decreasing. Possibly the cultivation of food for sale in Entebbe Township is a more attractive proposition. The 1944 crop provided only 30,000 lbs. of raw cotton (Variety X.3) from which 162 bags of seed were obtained for planting in the Masaka 1st stage increase area. For the 1945-46 crop the Peninsula was re-supplied with X.3 of Bukalasa origin.

#### MASAKA—1ST STAGE INCREASE—X.3.

The original three mirukas of Gombolola Mutuba VI Buddu were planted up with X.3 seed of Entebbe origin, the remaining mirukas being "washed out" with Masaka produced seed. Growth was good and reports indicated that appearance and yields were considerably better than "Local". Native opinion too was much in favour of the new variety. Unfortunately, in the absence of an Agricultural Officer, the acreage estimation was unreliable and no indication of yields per acre was obtained. A total of 148·8 tons of raw cotton was sold on which a ginning test was conducted; the G.O.T. was 29·76%. The seed production of this variety sufficed to plant the whole of Koki county in 1945 and the gombololas of Mutuba IV, Mutuba V, Mutuba VI, Mutuba VIII and four mirukas of Sabagabo, all in Buddu county. The Gombolola of Mutuba VI was re-supplied from Entebbe.

#### General.

##### 1945-46 CROP.

On account of the late arrival of the spring rains there was little early planting and acreages planted during May and June were small in all areas. Seed withdrawals were heavy and there were many other indications that heavy plantings would be made, probably in excess of the previous season's.

#### COTTON SEED MOVEMENTS.

In addition to the normal movements of seed in connection with cotton seed increase referred to above, considerable movements were made from Kyagwe to South Central Zone and to North Mengo. The South Central Zone was re-supplied with seed from East Kyagwe ginneries; the North Kyagwe ginneries provided renewal seed for Bulemezi and fringing areas to the south supplemented with seed from Buruli and Singo.

#### Robusta Coffee.

##### GENERAL.

In most areas, coffee trees suffered badly from die-back in consequence of the delayed spring rains of 1944 and only an average crop was picked. Recorded primary market sales are as follows:—

#### Primary Market Sales—Tons.

| District.                       | Arabica.     |             | Robusta. |              | Total.   |
|---------------------------------|--------------|-------------|----------|--------------|----------|
|                                 | Hulled.      | Dry Cherry. | Hulled.  | Dry Cherry.  |          |
| Mengo ..                        | 11·4         | 816·5       | 21·2     | 18,650·4     | 19,499·5 |
| Masaka ..                       | 12·7         | 203·9       | 70·4     | 7,060·2      | 7,347·2  |
| Mubende ..                      | 46·6         | 35·7        | 61·3     | 139·9        | 283·5    |
| TOTALS ..                       | 70·7         | 1,056·1     | 152·9    | 25,850·5     | 27,130·2 |
|                                 | Tons Arabica |             |          | Tons Robusta | Total.   |
| Clean Coffee Equivalent ..      | 598          |             | ..       | 13,078       | 13,676   |
| 1943-44 Clean Coffee Equivalent | 414          |             | ..       | 11,438       | 11,852   |



Stabilised prices as introduced in 1943 were in force throughout the year and encouraged continued expansion of cultivation. There was a keen demand for planting material and the full production of seedlings at Native Administration coffee nurseries was utilised in addition to private supplies. Distributions from nurseries were as follows :—

| <i>District.</i>        |    |    | <i>No. of seedlings.</i>               |
|-------------------------|----|----|----------------------------------------|
| Mengo                   | .. | .. | 193,114 ( <i>records incomplete</i> ). |
| Mubende                 | .. | .. | 53,626                                 |
| Masaka                  | .. | .. | 160,548                                |
| TOTAL                   |    |    | 407,288                                |
| Previous Season's Total |    |    | 661,907                                |

The Coffee Curing Factories handled the crop satisfactorily, although half way through the season there was some congestion in the Kampala factories on account of railway transport difficulties and unexpectedly large quantities coming forward at one time. The following table gives details of the various grades of coffee passed for export through the Mengo and Masaka Curing Factories :—

| <i>Grade.</i>           | <i>Masaka.<br/>Tons.</i> | <i>Mengo.<br/>Tons.</i> | <i>Totals.<br/>Tons.</i> |
|-------------------------|--------------------------|-------------------------|--------------------------|
| Arabica F.A.Q. .. ..    | 125.3                    | 285.0                   | 410.3                    |
| Arabica U.G. .. ..      | 25.0                     | 88.3                    | 113.3                    |
| Congo Arabica F.A.Q. .. | 42.2                     | 101.3                   | 143.5                    |
| Congo Arabica U.G. ..   | ..                       | 1.7                     | 1.7                      |
| Robusta F.A.Q. .. ..    | 3,960.9                  | 10,089.6                | 14,050.5                 |
| Robusta U.G. .. ..      | 53.0                     | 375.4                   | 428.4                    |
| Robusta Triage .. ..    | 235.0                    | 209.5                   | 444.5                    |
| TOTALS ..               | 4,441.4                  | 11,150.8                | 15,592.2                 |

The Coffee Grading Inspector had a certain amount of difficulty with musty and wet coffee at the Curing Works. In consequence the legal liability of the Curing Works was investigated and it was found that those which were scheduled markets for primary buying under the Native Produce Marketing Ordinance were liable equally with other primary buyers to refrain from storing wet or musty coffee. Subsequently all Curing Works were declared scheduled markets.

Inspection of primary markets was continued as routine and on the whole quality was satisfactory. The Coffee Grading Inspector prosecuted two buyers for offences under section 4 (b) of the Marketing of Coffee Rules and obtained convictions in both cases.

### Maize.

The 1944-45 crop was the biggest yet produced and amounted to 530,471 bags (48,225 tons) bought by approved marketing organisations. Details are as follows :—

| <i>Zone.</i>          | <i>Estimated Acreage.</i> | <i>Recorded Sales.<br/>Bags.</i> |
|-----------------------|---------------------------|----------------------------------|
| Mengo-Entebbe         | 114,111                   | 458,845                          |
| Mubende-Toro          |                           | 17,315                           |
| Masaka .. ..          | 9,256                     | 10,107                           |
| Estates .. ..         | ..                        | 34,950                           |
| Co-operative Union .. | ..                        | 9,254                            |
|                       | 123,367                   | 530,471                          |

The marketing organisation was inadequate to deal with this unexpectedly large crop and railway facilities for export were unable to cope with the rate of booking. At the majority of markets the stores rapidly became choked with maize, which could not be moved, and accumulations at booking points were considerable. It was necessary to suspend marketing temporarily to enable stocks to be cleared, but despite this assistance the position was not greatly eased.

The grade of the crop was excellent for the first half of the season, but later deteriorated rapidly on account of the abnormally wet weather conditions. Rejections at booking points increased rapidly in consequence, and, by the time marketing ceased on December 16th, had reached the high figure of 25% of all maize offered for inspection and booking.

At the end of the season a considerable balance of maize amounting to 70,000 bags was left on the hands of the marketing organisation. It was necessary for Government to take over this balance and store in central stores. Large quantities were accumulated in this way, although a high proportion offered to Government failed to pass inspection for quality and was rejected.

In retrospect, the 1944 season was very unsatisfactory. The large crop taxed marketing resources beyond their capacity and showed conclusively that under present conditions a crop of 350,000 bags was as much as could be handled efficiently. Growers were put to considerable inconvenience and undoubtedly suffered such hardship and loss that further maize production was regarded with disfavour.

The need for central storage and drying facilities was strikingly demonstrated. There is little doubt, had these been available and despite the inadequate primary marketing facilities, that disposal of the crop would have been a comparatively simple matter.

#### 1945 CROP.

In view of the difficulties experienced in handling the 1944 crop, it was decided that the production target should be 300,000 bags. Subsequently this was amended to a production not to exceed 300,000 bags. To implement this change the area in which guaranteed prices and marketing would apply was limited to the four main maize producing counties of Buganda which it was estimated would produce up to 300,000 bags under normal seasonal conditions. Subsequently the guaranteed marketing area was further reduced.

Planting conditions were very unfavourable and acreages did not come up to expectations. Little early planting was possible and, when good planting rains were received towards the end of April, growers were concerned primarily to ensure domestic food production and maize planting was neglected. The policy of restriction too had a depressing effect as it created some uncertainty in the growers' minds as to Government's intentions. There is little doubt that this feeling was aided and abetted by political agitators as part of their policy of embarrassing Government. In April, limitation of guaranteed marketing was abandoned, but by this time growers were concentrating on food planting and cotton plot preparation and were no longer interested in maize.

Total plantings were estimated at 37,413 acres with surplus production for sale of 123,000 bags, of which approximately 80,000 bags were estimated as producible from Kyagwe county. Conditions justified this low estimate as, in addition to the small scale of the plantings, bad weather had an adverse effect on growth. Surplus sales were estimated at the rate of one to four bags per acre according to local conditions, but latterly it was doubtful if even these low figures would be reached.

#### Pulses.

#### SOYA BEANS.

Total purchases for the season amounted to 4,020 tons as compared with 3,999 tons in the previous year. A considerable increase in production had

been anticipated, but the crop is no longer popular in some of the former producing areas and in Kyagwe county it has largely gone out of production. No change was made in prices paid to growers and the Uganda Co., Ltd., continued to hold the Agency for marketing and disposal.

Unfavourable weather interfered with the planting of the spring sown crop of the 1945-46 season and it is probable that there will be a sharp drop in production.

#### MIXED BEANS.

The season was extremely favourable for beans and production reached a high level. A total of 6,674 tons was marketed. There was no extension in the cultivation of Haricot beans and only 26 tons were sold. The strong climbing habit of this bean renders it unpopular and no increase in production may be expected.

Prices for ordinary beans in Masaka and Mengo Districts were fixed at Shs. 165/- per ton F.O.R., which was equivalent to 6 cts. per lb. F.O.R., naked to the producer. In Mubende District a flat price of 4 cts. per lb. payable throughout the district was fixed.

#### GRAMS.

High prices rising to 20 cts. per lb. encouraged the production of black and green grams and sales increased from the 1943 figure of 259 tons to 918 tons. The bulk of this production was in Masaka District.

### Oil Seeds.

#### GROUNDNUTS.

There was little increase in the production of this crop. Sales amounted to 1,149 tons as against a target of 3,200 tons and a production of 1,012 tons in the previous season. The labour requirements of this crop are high in proportion to the cash return. Little expansion in cultivation is likely without a considerable increase in the price to the producer, particularly as long as it has to face competition from maize. In Mubende District, where maize for export is not grown, the crop for the 1944-45 season amounted to 685 tons as compared with 277 tons in 1943 and it is probable that production will continue to expand in that district. The present indications are that the 1945-46 Mubende production will reach 800 tons. In Mengo District, however, reduced production is anticipated. The early spring plantings from which the main crop is derived failed on account of dry weather. Growers lost their seed and, although additional supplies were obtained and issued, acreages obtained were not satisfactory. In an attempt to improve the position, a drive to encourage interplanting with cotton was started and this may offset losses on the main plantings to some extent.

#### SIMSIM.

Production showed a marked decline, sales dropping from 1,703 tons in 1943 to 1,201 tons in 1944-45. Even in the Bulemezi, north Kyagwe and Kyadondo areas of Mengo District, where simsim cultivation is normally well established, there has been a considerable decrease of interest in the crop. This appears to be a progressive tendency and in Mengo District the crop planted in the spring of 1945 showed twenty-five per cent. decrease in acreage. Mubende District on the other hand showed a considerable increase and it appears that as with groundnuts production is on the up grade in that district.

#### CASTOR SEED.

Production of this crop continued to expand in Masaka District and sales rose from 115 tons to 256 tons. In other areas, however, no interest was taken in the crop and sales were negligible.



**COTTON SEED.**

The disposal of the seed production of the 1945 crop was more stringently controlled than heretofore, particularly in respect of seed for planting and fuel. As regards the former, requisitions were reduced by approximately 25% in the Old Entebbe and Kyadondo areas and in Masaka District by 40%. In both cases seed supplies were adequate for the demand.

**Fruit.**

The fruit agencies continued to function satisfactorily in respect of both military and civil supplies. No change was made in prices payable to the growers, but sales were considerably increased. Hard fruit purchases rose from 797 tons in the 1943-44 season to 1,957 tons.

Complaints from the East African War Supplies Board in respect of the quality of fruit deliveries were less frequent. Some difficulty was experienced in meeting the fluctuating demands of the Board without Agents experiencing loss through large quantities of surplus fruit being left on their hands. A satisfactory solution was reached by arranging for Agents to submit advance monthly estimates of exports for whole or part acceptance by the Board. By this arrangement, they were enabled to obtain alternative markets for surplus purchases so that fruit was not left on their hands.

Decontrol of fruit was considered towards the end of 1944 on account of the fact that supplies much exceeded military requirements. It was felt, however, that these could not be guaranteed without organised marketing under the Control and accordingly the proposal was abandoned.

In addition to controlled hard fruit, there were also considerable purchases of miscellaneous soft fruits, principally for the supply of Uganda Camps. A total of 410 tons was purchased.

**Miscellaneous Crops.****MILLETS.**

Production of both sorghum and finger millet on a guaranteed market basis continued up to the end of 1944. Sales amounted to 1,287 tons and 347 tons respectively. With the improvement in food supplies in both Kenya and Uganda in the second half of 1944, the disposal of millets caused the Tripartite Produce Agency considerable embarrassment and it was agreed that marketing and disposal should revert to normal trading channels. Accordingly 1945 produce buying permits were issued to traders on the understanding that disposal would be their own responsibility and the controlled F.O.R. prices were cancelled.

The introduction of sweet millets in the North Mengo area has met with little response, except in Buruli county where some interest has been shown. Birds are largely responsible for the lack of interest taken in these millets, the white seeded varieties being particularly susceptible to damage.

**CASSAVA.**

In the second half of 1944 supplies of dried cassava continued to be purchased for inclusion in standard meals for famine relief and general consumption. A total of 416 tons was sold for this purpose mainly from Masaka District. Unfortunately, quality was poor as much of the crop lifted was old and soft and rapidly went mouldy and complaints on that score were numerous.

**CHILLIES.**

256 tons of chillies were marketed, principally in Masaka District, representing an increase of nearly 100 tons on the previous season's figure. The majority of the sales consisted of large chillies and prices ranging from 40 cts. to 75 cts. per lb. were paid. Towards the end of 1944, however, on account of requirements by the Ministry of Supply, export was controlled

and a maximum F.O.R. price for export was fixed at Shs. 20 - per frasila. Price levels were smoothed out in consequence and prices paid were in the neighbourhood of 50 cts. per lb. for the remainder of the season.

#### ENGLISH POTATOES.

Supplies of this crop were generally adequate throughout the season. Masaka District was again the chief producer and 400 tons were sold.

#### Native Food Crops.

In consequence of the severe scarcity of food, which was general in the early part of 1944, intensive food planting was put in hand and adequate food supplies rapidly became available in the second half of the year. In July, it was necessary to remove restrictions on the sale of famine meals as the demand decreased to the extent of there being a risk of stocks becoming unsaleable.

Restrictions on the export of foodstuffs from the districts were maintained by Orders issued under the Native Foodstuffs Ordinance. These, however, were more of a precautionary measure than a necessity.

Plantains were generally in short supply up to the end of 1944, but from then onwards ample supplies rapidly became available. Exports to Kampala from Bugerere and Singo continued on a large scale as in previous years. Apart from these areas, where plantains have become a major cash crop, the standard of banana garden maintenance continued to be generally unsatisfactory. Well maintained, and well mulched, banana gardens are the exception rather than the rule, although in certain localities marked improvements have been effected. Banana weevil is widespread and is now well established in the Mubende and north Singo areas where it was comparatively rare until recent years. With increasing calls on available family labour for the cultivation of other crops there is little doubt that, if the plantain is to maintain its place, a change of attitude towards its cultivation is essential.

Plantings of sweet potatoes and cassava were on a generous scale in the second half of 1944, but owing to the delayed spring rains of 1945 the spring plantings were much below normal. Supplies of cassava were, however, adequate throughout the year and, apart from a difficult period in the early part of 1945, sweet potatoes were plentiful.

The recurrent near famines of recent years in Buganda are an indication that food production as a whole is inadequate. Proposals have been made to the Buganda Government with the approval of the Resident for the organised production of famine reserve foods on a permanent basis.

#### Pests and Diseases.

With the following exceptions, the diseases and pests position was normal throughout the year and no undue incidence and damage was reported.

Cotton stainers (*Dysdercus* spp.). The unusually heavy and prolonged rains in the autumn of 1944 encouraged breeding of this pest and there was an abnormal increase in population with a corresponding increase in damage. Fortunately the carry-over to the 1945 season was light for which the semi-drought conditions which prevailed during the first four months of the year were largely responsible.

Sweet potato caterpillars, principally *Acrasis* spp. (although *Herse consociuli* also occurred), were responsible for severe and widespread defoliation of sweet potatoes in the early part of 1945. Planting material was markedly reduced and, in consequence, planting of the main spring crop was delayed appreciably.

Sweet potato weevils also caused abnormal damage during the first four months of 1945: the prolonged dry weather was probably largely responsible.

The infestation of weevils on maize, both in field and store, has already been referred to above. The high density of this infestation was accounted for largely by the abnormally prolonged autumn rains of 1944 resulting in high humidities and damp storage.

Intensive cassava mosaic disease damage was reported in North Mengo, Bugerere, Mubende and Masaka, damage being particularly severe in the northern areas. In the vicinity of the Kibuga also, extreme stunting of plants by mosaic disease has been noted.

### Agricultural Education.

#### BUKALASA—RURAL ASSISTANTS.

This course started on the 1st July, 1944, with 20 students. Seventeen of them came from Buganda, one from Bunyoro and two from Ankole. Five students proved unsatisfactory and were dismissed during the year. Reasonable progress has been made by the remainder. Thirteen of the students are married and seven brought their wives and families to Bukalasa; these latter received training on the domestic side. The approved syllabus of training was followed and, with the exception of the five men referred to above, the response from the students was satisfactory. Some difficulty in teaching has been experienced on account of variation in the previous educational standards reached by the students. All teaching is in English, but many of the students have not sufficient knowledge of the language either to understand or speak it adequately. It was found necessary therefore to start an English class.

In addition to routine training, other activities of the students were numerous. These comprised the organising of adult education for illiterates on Bukalasa and in the surrounding villages, scouting, games, athletics and concerts. The adult education scheme, apart from its value in the villages, has proved most useful in providing experience and contacts for the students with the type of people among whom their future work will lie. It is interesting to note that this adult education is most appreciated by the women who outnumber the men by 2 : 1 in the classes.

#### OTHER COURSES.

As all available accommodation was required for Rural Assistants, it was not possible to continue short courses for schoolmasters, miruka chiefs and farmers and these were discontinued temporarily.

A group of 13 farm labourers in training at the beginning of 1944, were however enabled to complete the year by finding accommodation for them in the old lecture room. This scheme of training was subsequently also discontinued.

*Cultivators' Groups—Masaka.*—The origin, progress and present position of this scheme of training is briefly reviewed below.

The scheme was initiated in 1938 with the object of forming groups of farmers trained in simple improved agricultural practices who would provide an example and demonstration for their neighbours. It was hoped that such improved practices would spread through increasing waves of influence until the whole district was covered.

Three groups were trained at Bukalasa, subsequent groups were trained on their home mitalla in the interests of convenience and local colour. Training covered a period of one week. The syllabus was confined to the barest essentials of improved practice and was almost entirely practical. Twelve members are insisted upon before a course is arranged and a group is formed.

There are now 35 groups principally in Buddu county, with a total membership of 597 farmers, of whom several are women. Out of the total of 35 groups, 12 groups have established well and are making progress,

9 groups have only recently been constituted and progress cannot yet be judged, while the remaining 14 groups have to all intents and purposes failed.

In 1941, the Buganda Government presented the Masaka Agricultural Cup for annual competition among the groups. This has been won by the Kyamusoke group, the Mutondo group two years' running and lastly by Kirembwe.

In general, the initial enthusiasm of the groups has dwindled with the years and many of the original formations are now groups only in name. The greatest success is to be found where the local chief takes an interest and backs departmental advice with the weight of his administrative and social influence. This is a very significant fact and lends additional support to the belief that the chiefs are still the natural leaders of the people and, at this stage, their support is essential if progress is to be achieved.

In retrospect, our six years experience with this scheme of training is disappointing and the results obtained are out of all proportion to the intensity of the effort made by this Department. The influence of the groups on the surrounding people has as yet been negligible and concentration on them has undoubtedly resulted in the neglect of district agricultural progress as a whole. Amendments are now being introduced to give the scheme a wider application among the population as a whole and to enlist the fuller co-operation and assistance of the chiefs.

W. J. MILL IRVING,  
*Provincial Agricultural Officer,  
Buganda Province.*



## UGANDA PROTECTORATE.

## SOIL CONSERVATION REPORT FOR 1944.

This Report has been compiled from reports submitted by the Agricultural, Forestry, Geological, Public Works and Veterinary Departments.

The functions of the Rural Development Sub-Committee were absorbed during the year by the more comprehensive Development and Welfare Committee and the control and disbursement of all funds voted for soil conservation work in the Protectorate will in future be vested in this Committee.

## 2. Maintenance of Fertility—General.

The sustained demand for maximum production of certain crops, particularly of oilseeds, maize and food crops, again put a heavy strain on the soil and resulted in a smaller proportion of land being rested than under normal conditions. A greatly increased acreage was planted in all districts with local food crops as the result of depleted reserves caused by the failure of the late rains in two successive years and the area under maize in Buganda was again dangerously high.

### EASTERN PROVINCE.

The establishment of grass strips between plots made satisfactory progress in Mbale District except in Tororo Division. In Busoga also, this practice was adopted on a slightly increased scale although many of the strips were destroyed when land was being cleared for the millet crop, and it is still not sufficiently realised that these strips are intended to be permanent wash-stops. The soil conservation teams in Busoga marked out eight mitalla with live posts for demarcating the strips. In Teso, grass stripping is now accepted as normal practice. In the Bugishu coffee areas on the slopes of Mount Elgon a new campaign was carried out to rectify the neglect of wash-breaks established during 1943, and this met with varying success. The use of vetiver grass for this purpose is spreading slowly. Stocks of *Paspalum notatum* grass for anti-erosion work are being built up in all districts for use on an increased scale in future. No progress can be recorded in the use of manure in the Province during 1944.

### WESTERN PROVINCE.

The adoption of measures applicable to the varying conditions in different districts made satisfactory progress, particularly so in Bunyoro where the development noted in last year's report was well maintained. The practice of felling large trees during clearing operations which was very prevalent at one time has now practically ceased in this district. The use of grass strips continued to expand in Lango and live posts are being planted to an increasing extent to mark the position of the strips. Although continued progress has been made by growers in Ankole to protect plots devoted to the production of war-time crops, this has not yet spread to any extent to their own domestic food plots. The same remarks apply largely in the case of Kigezi District. The thickly populated area in the vicinity of Kabale, the district headquarters of Kigezi, forms a problem of its own and an investigation into the exact position regarding land usage, human and stock populations, and measures to safeguard the fertility of the soil in this area was commenced during December. The officers conducting this investigation will also report on possible areas of resettlement for part of the existing heavy population near Kabale.

## BUGANDA PROVINCE.

Progress in strip cropping with the use of elephant grass lines and other live hedges continued slowly, but, except in Masaka District, little alternate plot stripping has been done. The mulching of coffee plots continues to extend gradually and a drive for the better care and mulching of banana plots met with some success. Ridge planting of sweet potatoes as opposed to hill planting was encouraged in light soil areas and was taken up by a large number of people. In Bugerere county, cash prizes were presented by the Buganda Government for better farming methods, soil conservation measures being taken largely into account.

In the three dry western counties of Masaka District, it was decided to encourage the use of grass strips instead of grass hedging as in the rest of Masaka and Buganda. In this district also, the use of earth bunds to prevent soil-wash is part of the accepted policy, and large numbers of plots were protected in this manner.

Minor work, such as gully stopping and the grassing of house compounds, continues to be carried out by the people with but little supervision from Government.

The making of compost by the Kampala Township Authority continued throughout the year and a total of 1,749 tons was transported and distributed free to cultivators in the vicinity of Kampala. The transport charges were paid by the Buganda Native Government, which is an encouraging sign of their realization of the value of this material. In general, good results have been obtained from the use of this compost which has been applied mainly to banana gardens. By arrangement with the coffee curing factories in Kampala, coffee husks were also transported and distributed for mulching purposes.

### 3. Special Demonstration Centres.

## EASTERN PROVINCE.

The population in Ajeluk mutala in Teso District decreased slightly during the year, the total number of people living on the mutala in 1944 being 485. This reduction was due partly to a few families moving elsewhere, also to deaths and to men joining the Army. The number of cattle dropped from 470 to 409, but this reduction was largely due to the fact that one man who left the mutala took with him 40 to 50 head of stock. There was a welcome increase per head in the acreage of all food crops planted, with the exception of peas and beans, only a small quantity of which are cultivated. The cotton acreage showed a small corresponding decrease. Plant introductions during the year comprised resistant varieties of cassava, a selection of vegetables, and further supplies of citrus. The tree planting programme was carried out according to plan. Rehousing made very satisfactory progress and twenty-three new houses were erected during the year, ten of these being part of the 1943 programme which could not be completed during that year owing to the scarcity of thatching material. Minor repairs were carried out to the existing water supplies and another spring was impounded. A further good source of water was discovered during building operations which will be developed. As the 1943-44 dry season was exceptional in its length and severity, it provided a good test for the existing water supplies, which stood up well to the long dry spell. Of a total of twelve springs used on the mutala, eight provided water throughout the dry season although some of these dropped to a very low level. These protected supplies were a great boon to the inhabitants of the mutala and to people living in the vicinity of Ajeluk, who made great use of them. An analysis of the numbers of children on this mutala attending school showed that just over fifty per cent. of the boys and just under fifty per cent. of the girls of school age are being educated. Although these figures compare favourably with other parts of Teso, there is still room for a considerable improvement.

A meat shop was built in May and moderate sales took place. After a period of trial, a tile of some promise is now being produced in small quantities and the school store has been roofed with these tiles. Two young potters were sent for training to the Entebbe Pottery. Concerts were arranged and proved to be a popular event and a small agricultural and baby show was held in July.

An Assistant Agricultural Officer was in residence throughout the year, but it was not possible for the Agricultural Officer in charge to devote as much of his time to Ajeluk as had been given in 1943.

In Mbale District, the demonstration area at Agule was maintained, also a mutala in Bugishu to which a rural assistant was posted. The latter area received more visits from cultivators during the year, most of whom commented favourably on the work being carried out. In Busoga, the change over to grass stripping on the five seed increase farms was completed. Small bunded rice demonstration plots were laid down in all rice growing areas. Only small progress was made on the four demonstration mitalla in Busoga which are staffed by the earlier trained rural assistants.

#### WESTERN PROVINCE.

Work on two selected demonstration centres in Bunyoro was extended. Tree planting at one centre now nearly covers the hill top, and smaller plantations of three types of trees have been established at the other. The available land at both these centres has been marked out for contour strip cropping, but as most of the cultivators live outside the areas, by no means all the available land has been taken up.

#### BUGANDA PROVINCE.

Work at Nsangi was largely of a maintenance nature. Efforts were made to encourage the resting of land by giving assistance to householders with large enough holdings to plant up this land with elephant grass. Another distribution of cotton seed for use as manure was made, but little interest was taken. Promising results were obtained from an attempt to regenerate a small area of banana garden by uprooting and digging deep pits before replanting. In the grazing areas, hedges of *Acacia holstei* have established themselves well and a part of one area has been put down to *Paspalum notatum* grass. Another stone-lined water hole has been made in the swamp fringe zone. In the hill cap forest zone, although losses from planted trees have been severe, the survivors have made good growth. *Cedrela australis* continues to show promise as a forest tree, and transplants and establishes itself well. Work on the smaller demonstration centres in Buganda at Kiyimbwe, Lwada and Gulama continued. Strip cropping was extended, various types of live wash-breaks were tried, and plantain gardens were regenerated. Attempts to encourage measures against soil wash in the Nubian villages near Bombo have so far met with little success. The Masaka hillside groups continued to develop their land on approved lines, although increased supervision was necessary in some cases where the correct methods were not being employed.

#### 4. Overstocking and Overgrazing.

Promising results have been obtained in Teso and Mbale Districts of the Eastern Province from the closing of certain areas previously damaged by excessive movement and grazing of stock. It has been possible to reopen some of these areas which have regenerated well. Some of the worst areas in Mbale District have been closed by the Native Councils themselves which is an encouraging sign for the future. The regulation of stock in the Sebei area below Mount Elgon is becoming an important problem, as are the big areas adjoining the lake in northern Busoga. The problem is bound up with the present lack of surface water supplies. The reservation from grazing of eroded



patches on the south Lango lake shore have shown that unless erosion has proceeded too far a rest of one year from grazing is a sufficient period to allow before grazing recommences, but that with badly eroded land grazing must be prohibited for some years. Here too, voluntary measures have been taken to put out of use the areas in worst condition by placing thorn branches and scrub over the surface of the land to encourage the growth of grass. In Buganda, marked progress was made in the development of a more intensive method of cattle management whereby the cattle are housed at or near to the homes of the owners. In the areas adjacent to Kampala, the number of herds so housed now closely approaches a figure of one hundred per cent. and the owners are taking considerably more interest in the care and management of their stock.

The demand for meat continued to exceed the supply and this was reflected in a marked increase in the price of cattle, sheep, and goats. To conserve the cattle population in the main stock producing areas of Lango and Teso, the export of immature and breeding stock was prohibited and the export of cattle from these areas was confined to Buganda markets only. These measures have resulted in a reduction by approximately fifty per cent. of the total numbers of cattle exported during the past three years. Trypanosomiasis continued to take a heavy toll of cattle in many areas and the recent spread of tsetse fly constitutes a serious threat to the stock industry in the Protectorate. Owing to the spread of tsetse fly in Bugerere county, it was necessary to close the important stock trade route from Lango and Teso through this county, and instead, to rail the cattle from Namasagali.

### 5. Water Supplies.

#### EASTERN PROVINCE.

Dry weather slowed down the rate of dam making which was also affected by the flatter type of country in Usuku county of Teso to which the unit moved, necessitating the formation of larger embankments. Two dams were constructed during the year and a third dam which had been commenced in 1943 was completed with hand labour. Preliminary work on a large dam near the Teso-Karamoja border was put in hand towards the end of 1944. Veterinary considerations make it necessary to localize Karamoja cattle in this area so as to prevent the introduction of disease into Teso. Considerable attention was paid to the control and after care of dams in Teso and wardens were appointed to enforce the local rules, the vicinity of the dams being protected from grazing and stock movements by sisal hedges. Several of the dams have now been stocked with fish and arrangements are being made to regulate fishing as each dam reaches the stage when this can commence. In view of the prevalence of Bilharzia and Guinea Worm, an experimental step well measuring 50 feet square by 24 feet deep was constructed and seven more of this type of well were commenced in localities where no boreholes exist. It remains to be seen whether this type of well will prevent infection by parasites. Six levellers were employed in north Teso on the construction of small ponds ("Ataparin") in continuation of last year's work. 140 of these have been made since 1942 and although many of them dry up during long spells of rainless weather they undoubtedly fulfil a useful function in preventing excessive cattle movements during the greater part of the year and in providing easily accessible water supplies for stock. Two trial reservoirs were constructed in north Busoga by making use of the Native Administration road as a retaining wall. If successful, this method will provide a cheap and rapid means of increasing water supplies when urgently required. Nineteen successful boreholes were put down by the Government Drilling Section during the year.

#### WESTERN PROVINCE.

Eight dams were completed in Lango by the Native Administration and work on three more was started. The total number either completed or under



construction is thirty-three. No further boreholes were put down in 1944, but pumps were fitted to seven boreholes which were completed during the previous year. Attempts to introduce organized settlement in the areas served by the Lango dams have so far met with only small success. Five dams were made in Acholi by the Native Administration during 1943 and 1944, and two of these have been successful and have provided supplies of water throughout the dry season. No more boreholes were put down in the Western Province during the year, but the previous holes have proved to be most valuable and a marked flow of cultivators to the vicinity of the boreholes in the drier areas is noticeable.

#### BUGANDA PROVINCE.

Four dams of varying sizes were successfully completed in the drier parts of Gomba county during the first half of the year and these later accumulated satisfactory supplies of water. Work was commenced on two dams in Bugerere county with funds provided by the Buganda Government and these will be completed in 1945. One dam was constructed on a private estate at Lukumbi in Kyagwe county. Twenty successful boreholes were put down in various localities, mainly in Buruli and in north Bulemezi counties.

#### 6. Forestry and Tree Planting.

Alterations to the area of gazetted forest made after mapping, increased the area by 36 square miles. Approximately 90 square miles of reserve, mostly demarcated, including the important catchment ridge of Otze in Madi and a bamboo area in Acholi, await legal constitution. Most of these reserves have been approved locally, but still have to be submitted to the Tsetse and Trypanosomiasis Committee. This was not done during the year pending settlement of a general anti-tsetse policy.

Controlled early burning was carried out in 1,180 square miles of woodland reserves, many of which are showing improved woody growth under this treatment. Fuel and pole plantations, mainly of *Eucalyptus* and *Cassia*, were increased by 536 acres by the Forest Department, some 520 acres by Native Administrations and 100 acres by a firm of sugar producers under a special licence. The object of these plantations, which now cover nearly 15,000 acres, is to establish permanent supplies of fuel for large users and so to leave bush and woodland fuel for peasant use and avoid denudation. Of the fuel sold during the year, 33% came from plantations.

Assistance and encouragement to peasants to plant their own fuel plots in areas where wood is scanty were continued and the results are becoming noticeable in some districts such as Ankole. Black Wattle introduced into Toro four years ago is thriving and about 141,400 or 65% of those sown in 1944 were estimated to be established at the end of the year. Experiments in the planting of wind-breaks in the Lubare plains of Ankole and the downlands of Kebisoni in Kigezi are progressing favourably and mixtures of *Cedrela serrata*, *Cedrela toona*, *Ficus* spp. and *Euphorbia tiruculli* (for fire resistant edges) show considerable promise.

Improvement planting was continued in the forest areas of the dam-settlement sites in Lango and Acholi with varying success, and a good deal was learnt about this type of work which will be of value in the future.

A proposal for a forest policy to be adopted by the Buganda Government as part of their post-war development plan was drawn up. Suggestions were the reservation of 300 square miles of forest in the name of the Buganda Government, replacement of the 25,000 tons of timber believed to have been sold from private forests during the war, and the establishment of fuel and pole plantations near trading centres and Gombolola and Saza headquarters. The last proposal only is likely to be adopted at present.

## 7. Public Lands (including Roads) and Mission Lands.

The measures detailed in the 1943 Report for control and disposal of storm water from road surfaces and drains were continued with success during 1944 and the formation of grass margins alongside main roads made good progress. While the latter measure is intended primarily for the protection of the road structure, the grass verges perform an equally important function in conserving soil. The realignment of main roads which is now being undertaken gradually is having a beneficial effect from a soil conservation point of view.

Assistance continued to be given at selected mission centres wherever the authorities concerned were willing to co-operate and to implement the advice tendered. At Nkokonjeru Mission in Buganda, one-third of the whole cultivated area is being taken out of use for grass fallow regeneration and it is planned to work over the whole area in this way in a nine-year cycle. At Ndeje, all the cultivated area has been marked into strips for future cropping. Good progress was also made at Bujuni Mission in Mubende District.

A small-scale trial in a Crown Land tenancy system in relation to the rational development of peasant agriculture is being operated at Kakunyu in Singo county. The fundamental requirement is the maintenance of soil fertility on a holding containing the crop acreages of the average family in Buganda where immigrant labour is employed, and for this purpose ten-acre holdings based on a contour road have been allocated to tenants for operation on an alternating grass fallow strip-cropping system in so far as annual crop land is concerned.

In the Eastern Province, the Native Administration prison farms in all districts continued to provide demonstrations of good farming. Work was concentrated at three selected mission centres, and the farm at the Buluba Leper Settlement was reorganized.

## 8. Publicity and Education.

If was possible owing to better staff facilities to resume the full programme of chiefs' and cultivators' courses at Serere in the Eastern Province, and sixteen groups attended, including, for the first time, a group from Karamoja District. The full value of these courses depends considerably on subsequent follow-up work which is often difficult to arrange at the present time. Two groups of schoolmasters also attended a short course at Serere. The rural assistants' course entered its second year of training in October, 1944.

In Buganda, short courses for farmers, chiefs and school teachers were held at Bukalasa during the first half of the year. Subsequently they were discontinued as all available accommodation was required for the rural assistants who commenced their first year's training.

Numerous parties of chiefs and farmers visited Kawanda, and soil conservation methods were demonstrated to these visitors. The annual competition between the various cultivators' groups in Masaka District was again held. Some new groups have come into being, bringing the total to forty-one. In Bunyoro, the presentation of a shield to the Gombolola showing the best all round progress in the adoption of soil conservation methods resulted in good work being done. A number of articles relative to soil conservation were published in the Vernacular Press.

## 9. Experiments and Research Work.

The programme of long and short term experiments designed to obtain data on the best methods of regenerating worn out land, the optimum period of rest, control of grazing lands and their stock carrying capacity, etc., continued on the various Government farms throughout the country. The

beneficial effects of closing to grazing certain badly eroded areas have already been mentioned in Section 4 of this Report. Some interesting facts which have come to light in the short-grass areas during the course of the year's work may be summarised as follows. The marked response of applications of farmyard manure both on arable crops and on pasture land has been a feature. Grass recovery on overgrazed land has been materially hastened by contour furrowing, and this method of treatment holds great possibilities. Trials of various grass mixtures for resting leys in the short grass areas confirm previous findings that sown grasses possess little superiority over natural regeneration on good land where *Cynodon plectostachyum* comes in quickly. Increased attention was paid to the inclusion of leguminous plants as constituents of grazing land. Pastures at Ngetta where the land is farmed under a three-year's arable and three-year's grass rotation again demonstrated that they are capable of maintaining adult working oxen in good condition at the rate of one beast per acre in all except seasons of exceptional drought. Trials on the stall feeding of cattle continued in Buganda and a new trial was commenced in Bugishu. These trials have shown that in the thickly populated elephant grass areas where grazing land is scarce cattle can be successfully housed and fed on cut fodder with great benefit to the quality and weight of the animal.

In conclusion, it is desired to emphasise that the great value of grass in the agricultural economy of the country is becoming more and more apparent, as a means of combating erosion, restoring fertility to the soil and because of its relation to the place of stock in Agriculture. It is, in fact, almost our most important "crop" and a study of its management, and of the selection, uses and propagation of the most suitable varieties for different conditions, is work of prime importance.

ENTEBBE,

JUNE, 1945.

## Cotton Crops.

| Province and Zone.     | Acreage.  |           | Sales in Tons. |          | Yield per Acre in lbs. |          |
|------------------------|-----------|-----------|----------------|----------|------------------------|----------|
|                        | 1943-44.  | 1944-45.  | 1943-44.       | 1944-45. | 1933-44.               | 1944-45. |
| <b>BUGANDA—</b>        |           |           |                |          |                        |          |
| Mengo-Entebbe Zone ..  | 313,176   | 260,523   | 42,819         | 60,878   | 306                    | 523      |
| Masaka Zone ..         | 44,826    | 22,268    | 3,234          | 3,374    | 162                    | 339      |
| Mubende-Toro Zone ..   | 56,656    | 58,658    | 9,185          | 11,810   | 363                    | 451      |
| TOTALS ..              | 414,658   | 341,449   | 55,238         | 76,062   | 298                    | 499      |
| <b>EASTERN—</b>        |           |           |                |          |                        |          |
| Busoga ..              | 317,119   | 216,936   | 22,474         | 35,038   | 159                    | 362      |
| South Central ..       | 110,705   | 101,064   | 5,716          | 8,228    | 116                    | 182      |
| North Central ..       | 123,649   | 122,574   | 10,018         | 15,962   | 182                    | 292      |
| North Teso ..          | 37,594    | 42,821    | 1,750          | 1,722    | 104                    | 90       |
| Usuku ..               | 21,800    | 20,436    | 1,529          | 1,726    | 156                    | 80       |
| South Teso ..          | 45,989    | 49,839    | 3,754          | 5,136    | 182                    | 231      |
| Segregated Areas ..    | 29,087    | 32,351    | 2,217          | 2,858    | 171                    | 198      |
| TOTALS ..              | 685,943   | 586,041   | 47,458         | 69,670   | 153                    | 266      |
| <b>WESTERN—</b>        |           |           |                |          |                        |          |
| North Lango ..         | 49,693    | 57,460    | 4,448          | 6,314    | 200                    | 246      |
| South Lango ..         | 35,495    | 31,971    | 2,105          | 2,342    | 133                    | 167      |
| West Acholi ..         | 13,002    | 15,863    | 675            | 1,909    | 116                    | 270      |
| East Acholi Upper ..   | 3,922     | 4,020     | 119            | 306      | 68                     | 170      |
| East Acholi Lower ..   | 3034      | 3,713     | 172            | 462      | 127                    | 271      |
| Bunyoro ..             | 16,065    | 15,323    | 1,061          | 1,660    | 148                    | 243      |
| West Nile-Madi ..      | 11,989    | 16,653    | 735            | 2,105    | 137                    | 283      |
| TOTALS ..              | 133,200   | 145,003   | 9,315          | 15,098   | 157                    | 233      |
| PROTECTORATE TOTALS .. | 1,233,801 | 1,072,493 | 112,011        | 160,830  | 203                    | 337      |



## Estimate of Acreage under Crops, 1944.

| Crop.               | Native Cultivation. |                   |                   | Non-Native Cultivation. | Total.    |
|---------------------|---------------------|-------------------|-------------------|-------------------------|-----------|
|                     | Buganda Province.   | Eastern Province. | Western Province. |                         |           |
| Plantains ..        | 541,276             | 345,319           | 75,658            | ..                      | 962,253   |
| Sweet Potatoes ..   | 99,231              | 183,523           | 229,543           | ..                      | 512,297   |
| English Potatoes .. | 4,128               | ..                | 563               | ..                      | 4,691     |
| Millet—Mtama ..     | 29,216              | 103,837           | 213,271           | ..                      | 346,324   |
| Millet—Wimbi ..     | 30,190              | 606,059           | 385,025           | ..                      | 1,021,274 |
| Cotton ..           | 332,704             | 603,198           | 136,601           | ..                      | 1,072,503 |
| Coffee—Arabica ..   | 2,916               | 8,765             | 2,830             | 4,905                   | 19,416    |
| Coffee—Robusta ..   | 59,720              | 200               | 2,933             | 8,030                   | 70,883    |
| Maize ..            | 124,461             | 121,585           | 70,218            | ..                      | 316,264   |
| Beans ..            | 111,152             | 156,024           | 157,826           | ..                      | 425,002   |
| Sugar Cane ..       | 1,291               | 143               | 684               | 29,000*                 | 31,118    |
| Simsim ..           | 13,804              | 48,032            | 186,133           | ..                      | 247,969   |
| Groundnuts ..       | 40,230              | 171,793           | 73,854            | ..                      | 285,877   |
| Cassava ..          | 104,990             | 161,597           | 214,064           | ..                      | 480,651   |
| Tobacco ..          | 852                 | 500               | 4,965             | 76                      | 6,393     |
| Wheat ..            | 57                  | 2,300             | 2,927             | ..                      | 5,284     |
| Rice ..             | 57                  | 50,790            | 4,234             | ..                      | 55,081    |
| Chillies ..         | 410                 | ..                | 1,003             | ..                      | 1,413     |
| Rye ..              | 26                  | ..                | ..                | ..                      | 26        |
| Onions ..           | 250                 | ..                | 595               | ..                      | 845       |
| Rubber—Para ..      | 580                 | ..                | ..                | 7,000                   | 7,580     |
| Pears ..            | 250                 | ..                | 32,230            | ..                      | 32,480    |
| Soya Beans ..       | 32,239              | 1,813             | 7,110             | ..                      | 41,162    |
| Sisal ..            | ..                  | ..                | ..                | 10,620                  | 10,620    |
| Tobacco—Nicotine .. | ..                  | ..                | 479               | 479                     | 479       |
| Tea ..              | ..                  | ..                | ..                | 4,676                   | 4,676     |
| Pigeon Peas ..      | ..                  | ..                | 121,224           | ..                      | 121,224   |
| Flax ..             | ..                  | ..                | 1,170             | ..                      | 1,170     |
| Pyrethrum ..        | ..                  | ..                | 550               | ..                      | 550       |
| Miscellaneous ..    | 14,748              | 656               | 2,980             | 540                     | 18,924    |
| TOTAL ..            | 1,544,778           | 2,566,134         | 1,298,120         | 65,397                  | 6,104,429 |

\* approximate.

## Comparative Statements of Exports of Domestic Produce from the Uganda Protectorate.

## A. Quantities.

|                             | Unit.  | 1938.     | 1939.     | 1940.     | 1941.     | 1942.     | 1943.     | 1944.     |
|-----------------------------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Grain and Flour ..          | Cwt.   | 4,456     | 11,168    | 3,560     | 3,122     | 8,443     | 57,310    | 9,999     |
| Beans and Pulses ..         | "      | 2,317     | 2,366     | 1,005     | 493       | 6,969     | 285       | 52,394    |
| Feeding Stuffs for Animals  | Ton    | 647       | 658       | 364       | 285       | 106       | 30        | 50        |
| Chillies ..                 | Cwt.   | 883       | 1,973     | 4,449     | 6,523     | 9,586     | 12,224    | 13,405    |
| Coffee—Raw, Hulled          | "      | 280,141   | 342,267   | 343,016   | 389,449   | 330,559   | 393,534   | 364,506   |
| Salt ..                     | "      | 10,318    | 13,037    | 15,173    | 18,084    | 23,155    | 27,974    | 29,891    |
| Sugar—Refined ..            | "      | 224,878   | 237,495   | 417,001   | 234,417   | 290,404   | 229,880   | 209,834   |
| Tea ..                      | "      | 1,222     | 2,347     | 4,305     | 7,980     | 12,860    | 9,969     | 12,746    |
| Fish—Dried ..               | "      | 13,526    | 23,294    | 21,504    | 22,680    | 21,468    | 26,902    | 28,192    |
| Cigarettes ..               | Lbs.   | 403,698   | 352,765   | 368,634   | 889,709   | 1,035,024 | 1,286,257 | 1,891,023 |
| Tobacco—Manufactured        | "      | 29,277    | 20,101    | 26,658    | 60,825    | 55,011    | 45,395    | 41,972    |
| Tobacco—Unmanufactured      | "      | 283,356   | 418,169   | 596,876   | 951,496   | 602,921   | 598,744   | 923,246   |
| Timber ..                   | Cu.ft. | 8,336     | 3,724     | 27,715    | 55,960    | 88,499    | 5,471     | 9,597     |
| Tin Ore ..                  | Ton    | 511       | 491       | 435       | 450       | 444       | 393       | 385       |
| Wolfram Ore ..              | "      | ..        | ..        | ..        | ..        | 4         | 31        | 80        |
| Other Ores, etc. ..         | "      | 10        | 4         | 1         | ..        | 4         | 5         | 30        |
| Cotton, Raw ..              | Cental | 1,608,803 | 1,318,520 | 1,214,212 | 1,463,803 | 944,212   | 491,260   | 758,079   |
| Sisal, Fibre and Tow        | Ton    | 1,807     | 2,013     | 2,507     | 899       | 1,901     | 1,355     | 958       |
| Seed—Cotton ..              | "      | 122,716   | 85,041    | 41,601    | 2,653     | 20,714    | 10        | 13,829    |
| Sesame ..                   | "      | 819       | 2,595     | 1,175     | 95        | 250       | ..        | ..        |
| Groundnuts ..               | "      | ..        | 723       | 94        | 2,888     | 6,960     | 368       | 2         |
| Vegetable Oils ..           | Gals.  | 5,000     | 13,807    | 14,321    | 17,964    | 14,004    | 1,464     | 11,496    |
| Hides ..                    | Cwt.   | 27,927    | 27,767    | 22,996    | 32,381    | 32,668    | 35,411    | 22,060    |
| Skins ..                    | "      | 376,855   | 430,278   | 495,302   | 383,731   | 351,145   | 174,308   | 184,610   |
| Pyrethrum ..                | Cwt.   | ..        | ..        | ..        | 18        | 297       | 1,028     | 1,148     |
| Rubber ..                   | Cental | 14,802    | 16,270    | 11,484    | 10,813    | 13,992    | 19,151    | 15,188    |
| Ivory ..                    | Cwt.   | 466       | 567       | 519       | 487       | 292       | 240       | 386       |
| Other Manufactured Articles | "      | ..        | ..        | ..        | ..        | ..        | ..        | ..        |
| Methylated Spirits ..       | Gals.  | 3,859     | 4,772     | 5,192     | 7,869     | 17,066    | 3,649     | 15,366    |
| Gold Bullion ..             | Oz.    | 23,659    | 17,096    | 13,100    | 10,872    | 11,016    | 5,001     | 3,228     |

## B. Value—£.

|                                  | 1938.       | 1939.     | 1940.     | 1941.     | 1942.     | 1943.     | 1944.     |
|----------------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Grain and Flour ..               | £ 703       | £ 1,860   | £ 1,103   | £ 1,041   | £ 2,808   | £ 38,699  | £ 4,541   |
| Beans and Pulses ..              | 736         | 681       | 602       | 233       | 3,642     | 200       | 36,285    |
| Feeding Stuffs for Animals ..    | 2,929       | 2,849     | 1,586     | 842       | 300       | 75        | 140       |
| Chillies ..                      | 1,611       | 4,586     | 14,318    | 18,964    | 30,335    | 28,728    | 41,581    |
| Coffee—Raw, Hulled ..            | 327,636     | 437,067   | 469,495   | 597,271   | 685,039   | 1,143,165 | 1,012,618 |
| Salt ..                          | 1,566       | 1,890     | 2,093     | 2,683     | 4,046     | 4,270     | 5,734     |
| Sugar—Refined ..                 | 118,847     | 130,189   | 263,900   | 162,197   | 212,394   | 178,099   | 173,397   |
| Tea ..                           | 6,967       | 13,222    | 24,351    | 55,359    | 96,344    | 73,173    | 88,286    |
| Fish—Dried ..                    | 14,329      | 25,693    | 24,956    | 24,664    | 24,372    | 41,737    | 48,085    |
| Other Food and Drink ..          | 436         | 7,365     | 14,801    | 19,444    | 21,785    | 22,005    | 40,503    |
| Cigarettes ..                    | 42,974      | 36,882    | 49,963    | 99,467    | 254,324   | 442,802   | 563,983   |
| Tobacco—Manufactured ..          | 4,452       | 3,060     | 6,030     | 13,928    | 7,121     | 7,592     | 7,323     |
| Tobacco—Unmanufactured ..        | 7,798       | 11,448    | 20,932    | 32,254    | 21,383    | 31,381    | 43,146    |
| Timber ..                        | 1,391       | 598       | 7,571     | 13,034    | 16,118    | 693       | 2,373     |
| Tin Ore ..                       | 70,551      | 70,412    | 65,226    | 64,412    | 69,006    | 67,820    | 68,247    |
| Wolfram Ore ..                   | ..          | ..        | ..        | ..        | 1,452     | 10,122    | 27,284    |
| Other Ores, etc. ..              | 1,127       | 471       | 258       | ..        | 1,304     | 940       | 4,534     |
| Cotton, Raw ..                   | 3,427,948   | 2,655,553 | 3,760,109 | 4,262,235 | 2,861,475 | 3,237,322 | 5,043,413 |
| Sisal, Fibre and Tow ..          | 27,104      | 30,109    | 50,733    | 17,694    | 36,084    | 30,296    | 22,991    |
| Cotton Seed ..                   | 306,939     | 216,614   | 116,956   | 7,479     | 58,248    | 19        | 57,467    |
| Sesame Seed ..                   | 8,679       | 28,930    | 15,985    | 1,228     | 4,000     | ..        | ..        |
| Groundnuts ..                    | ..          | 8,173     | 1,032     | 43,492    | 115,040   | 6,067     | 42        |
| Vegetable Oils ..                | 550         | 1,342     | 1,603     | 2,438     | 2,321     | 265       | 3,303     |
| Hides ..                         | 66,214      | 65,769    | 62,960    | 97,868    | 128,400   | 138,290   | 84,261    |
| Skins ..                         | 19,446      | 24,588    | 29,731    | 25,924    | 26,721    | 13,143    | 26,185    |
| Pyrethrum ..                     | ..          | ..        | ..        | 60        | 1,233     | 6,650     | 8,459     |
| Rubber ..                        | 36,673      | 42,188    | 34,576    | 43,723    | 57,417    | 71,669    | 57,073    |
| Ivory ..                         | 2,878       | 17,378    | 18,904    | 18,507    | 13,256    | 14,999    | 23,687    |
| Other Unmanufactured Articles .. | 181         | 536       | 776       | 6,141     | 12,554    | 10,716    | 8,909     |
| Methylated Spirits ..            | 731         | 921       | 980       | 1,430     | 3,520     | 872       | 3,621     |
| Gold Bullion ..                  | 145,413     | 107,048   | 88,471    | 74,331    | 73,103    | 33,265    | 20,837    |
| Other Articles ..                | 94,26       | 8,635     | 4,920     | 2,551     | 6,061     | 4,047     | 4,494     |
| TOTAL ..                         | £ 4,668,966 | 3,956,047 | 5,155,121 | 5,710,900 | 4,841,206 | 5,659,721 | 7,531,862 |



## Uganda Cotton Exports.

| Country of Destination.       | 1938.     |           | 1939.     |           | 1940.     |           | 1941.     |           | 1942.    |           | 1943.    |           | 1944.    |           |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|                               | Centals.  | £         | Centals.  | £         | Centals.  | £         | Centals.  | £         | Centals. | £         | Centals. | £         | Centals. | £         |
| United Kingdom ..             | 111,553   | 230,320   | 49,037    | 99,484    | 113,156   | 333,330   | 14,144    | 40,432    | 403,075  | 1,200,776 | 240,820  | 1,614,339 | 114,072  | 448,391   |
| Ceylon ..                     | 3,010     | 6,522     | 4,000     | 8,000     | ..        | ..        | 5,200     | 15,600    | ..       | ..        | 3,800    | 25,650    | ..       | ..        |
| India ..                      | 1,374,846 | 2,947,076 | 780,638   | 1,582,401 | 587,591   | 1,847,938 | 1,344,053 | 3,917,604 | 495,528  | 1,527,222 | 245,948  | 1,593,396 | 643,297  | 4,592,948 |
| Union of South Africa ..      | ..        | ..        | ..        | ..        | ..        | ..        | 448       | 1,344     | 7,984    | 21,012    | 680      | 4,365     | 600      | 1,800     |
| Zanzibar ..                   | 174       | 257       | 48        | 45        | 103       | 81        | ..        | ..        | 20       | 23        | ..       | ..        | 20       | 58        |
| Tanganyika Territory ..       | 115       | 167       | 13        | 19        | 43        | 59        | 27        | 39        | 16       | 18        | ..       | ..        | 90       | 216       |
| Germany ..                    | 4,044     | 5,999     | 14,300    | 27,812    | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Belgium and Luxemburg ..      | 8,577     | 15,206    | 1,048     | 2,078     | 1,852     | 2,778     | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Switzerland ..                | ..        | ..        | ..        | ..        | 215       | 538       | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| France ..                     | 7,054     | 14,151    | 11,818    | 17,780    | 292,200   | 882,792   | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Bulgaria ..                   | 112       | 112       | ..        | ..        | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Italy ..                      | ..        | ..        | 8,104     | 16,158    | 1,240     | 3,370     | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Latvia ..                     | 3,600     | 8,100     | 2,756     | 5,512     | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Netherlands ..                | 9,580     | 20,570    | 3,040     | 7,600     | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Poland-Danzig ..              | 508       | 1,090     | 500       | 1,000     | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Portugal ..                   | 2,978     | 6,550     | 400       | 800       | 200       | 550       | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Sweden ..                     | 6,356     | 13,401    | 4,160     | 8,320     | 3,996     | 11,988    | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| U.S.S.R. ..                   | ..        | ..        | 440       | 880       | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| China ..                      | 12,000    | 26,210    | 37,961    | 76,242    | 89,448    | 262,856   | 400       | 1,200     | ..       | ..        | ..       | ..        | ..       | ..        |
| Netherlands East Indies ..    | 400       | 800       | 1,756     | 3,592     | 2,000     | 7,500     | 14,000    | 42,000    | ..       | ..        | ..       | ..        | ..       | ..        |
| Japan ..                      | 135,827   | 284,577   | 398,516   | 797,822   | 122,164   | 406,317   | 58,603    | 171,804   | ..       | ..        | ..       | ..        | ..       | ..        |
| French Possession in India .. | 2,200     | 2,400     | ..        | ..        | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Belgian Congo ..              | ..        | ..        | 4         | 5         | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Ruanda-Urundi ..              | 1         | 2         | ..        | ..        | ..        | ..        | ..        | ..        | ..       | ..        | 12       | 72        | ..       | ..        |
| Aden ..                       | ..        | ..        | ..        | ..        | ..        | ..        | ..        | ..        | ..       | ..        | ..       | ..        | ..       | ..        |
| Canada ..                     | ..        | ..        | ..        | ..        | ..        | ..        | 400       | 1,000     | 37,589   | 112,424   | ..       | ..        | ..       | ..        |
| Australia ..                  | ..        | ..        | 1         | 3         | 4         | 12        | 26,524    | 71,210    | ..       | ..        | ..       | ..        | ..       | ..        |
| U.S.A. ..                     | ..        | ..        | ..        | ..        | ..        | ..        | 4         | 2         | ..       | ..        | ..       | ..        | ..       | ..        |
| TOTALS ..                     | 1,682,934 | 3,583,510 | 1,318,520 | 2,655,553 | 1,214,212 | 3,760,109 | 1,463,803 | 4,262,235 | 944,212  | 2,861,475 | 491,260  | 3,237,822 | 758,079  | 5,043,413 |